ELECTRICAL REVIEW

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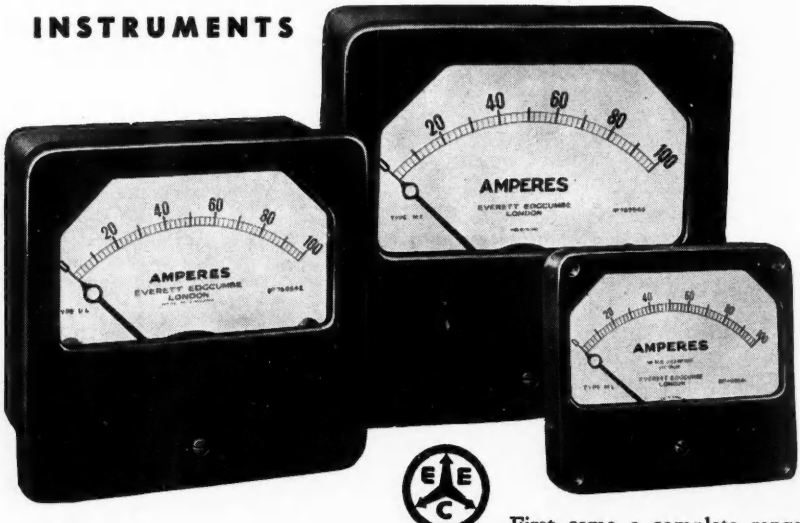

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ELECTRICAL REVIEW

Vol. CXLVI No. 3763 6TH JANUARY, 1950

THE OLDEST ELECTRICAL PAPER • ESTABLISHED 1872

Safety at Sea

INTERNATIONAL ACCEPTANCE OF THE NEW CONVENTION

IT may be recalled that in 1948 nearly three hundred delegates, representing thirty nations, assembled in London (the discussions lasted some seven weeks) for the task of drafting regulations which, by tacit consent, became the International Convention on Safety of Life at Sea, 1948. Observance of the agreement began on 1st January; it is now in course of ratification and will one year hence supersede the 1929 Convention, which did not contain any electrical clauses.

The new code is noteworthy for its rectification of that omission. Thus, for the first time, the essential services which electricity performs in ocean-going ships have been officially recognized internationally—rightly, too, for electrical installations in ships have grown in size and importance at a tremendous rate, and in passenger ships, which have to be surveyed each twelve months, often involve more inspection than the main propulsion plant.

Wording and Interpretation

It is extremely difficult so to word regulations detailing specific requirements that equally acceptable alternatives will be admissible and, conversely, that unsatisfactory installations complying with literal interpretations will be rejected. These truisms apply with greater force in the case of mandatory regulations, which cannot be amended at short notice, or without cumbersome intergovernmental negotiations.

Fortunately the proposal to incorporate in the 1948 Convention specific electrical requirements (some of which, especially those from the United States, were so detailed as to dismay the British delegates) was, in the main, successfully resisted. The resultant code finally emerged in more general terms, limited to safety aspects and emergency sources of power, which apply to passenger ships only.

Emergency Power

The most important addition to existing classification requirements is made by Regulation 22. It necessitates, when the source of emergency power is a generator, the provision of a battery of accumulator cells of sufficient capacity temporarily to maintain automatically emergency lighting continuously for half an hour and to close the watertight doors, if electrically operated, but not necessarily to close them all simultaneously. Also two sets of feeder cables are specified for the steering gear; these circuits and the motors they serve must be protected against short-circuit only, which means that ordinary overload tripping is not permitted.

Ship surveyors will welcome the eventual disappearance of "hull return," the use of which for power, heat and light distribution systems is now definitely prohibited, as a precaution against fire. Under the same heading are other requirements in respect of the positioning of essential service circuits, control of

ventilating fans, circuiting and switching of sprinkler water pumps, air compressors and alarm systems.

One clause in the fire-protection section is likely to cause controversy. It prohibits the use of electric radiators "of the exposed-element type" and, since the Convention is a legal document, interpretation must be literal. Failure to define the word "exposed" makes this clause prohibitive, though so drastic a requirement was not intended. It illustrates the wisdom of the opposition to the too-detailed drafting of the new Convention.

PIPEWORK PRODUCTION

So desperate is the need of the British Electricity Authority for power station pipework that it has had to contemplate importing it from the United States. Now it has adopted a more palatable method of meeting the shortage: C. A. Parsons & Co., Ltd., at the Authority's request, are rapidly constructing new works for the fabrication of steam and water pipes. The new works will get going in November next and is expected to be in full production by the following March. The intention is that Parsons shall carry out this work for a period of five or six years only by which time it is hoped that one of the principal obstacles to power station construction will be overcome.

WATER HEATER TAX

Last week we referred to the reduction of purchase tax in electric storage water heaters as though it were a *fait accompli*. The actual position is that in November (as we then reported) the Treasury announced that it proposed to make an Order reducing the tax and that representations were to be sent in by 25th November. Although the intention has thus been made clear the Order has not yet been promulgated. This inadvertence on our part does not invalidate our contention that the reduction should be extended to immersion heaters.

EQUIPMENT FOR CANADA

Suppliers of electrical equipment for machine tools will be grateful to the Machine Tool Trades Association for its booklet on Canadian electrical requirements reviewed on another page. In comparatively small space it deals with all the essential points of the Canadian Electrical Code in so far as it concerns machine tool equipment and it should thus prove to be a very useful preliminary guide to electrical manufacturers called upon by machine tool makers to provide motive and control equipment. Special attention is directed to the newly-established B.S.I. approval system which was dealt with in the *Electrical Review* of 16th December and (to show that British electrical manufacturers are alive to the needs) there is a list of apparatus for which approval has already been secured.

COMPETITIVE TENDERS

Before the devaluation of sterling it was considered extremely difficult, if not impossible, for British manufacturers of heavy electrical plant to compete effectively in the United States with American producers. It is indicative of the possibilities raised by the lowering of the pound's dollar value that Ferranti, Ltd., and the English Electric Co. have just put in tenders for transformers which are lower than those presented by leading American makers. Acceptance may be influenced by such considerations as preference for American manufacturers, price-variation clauses and departures from specification but this is something of a test case and the decision may have a great effect upon electrical business with the United States.

APPROVED CONTRACTORS

Negotiations which have been proceeding since electricity supply vesting day have resulted in a reconstruction of the National Register of Electrical Installation Contractors to meet the altered conditions. The new title—National Inspection Council for Electrical Installation Contractors—is, unfortunately, more cumbersome than the old one but it may be endured if the effectiveness of the system is similarly increased. The backing of the B.E.A. and Electricity Boards should have that effect; and no doubt the organized electrical contractors will see in the changed nature of the Register an opportunity to return to the fold after their temporary estrangement. Those who secure the cachet of the Council will be designated "Approved Contractors."

Lighting in Museums

USEFUL GUIDANCE AND SOME RECOMMENDATIONS

By S. G. TURNER,* F.I.E.S.

SINCE the exhibits are the essentials of museums and art galleries, it is all-important that their every feature should be seen clearly. The creation of better natural light conditions may often prove an unsurmountable task, having regard to the wide variation in architectural design and the considerable age of many museums.

The need for better artificial lighting has been challenged by many who recall that museums are closed at dusk in winter and well before in summer. Their great educational value is thus being withheld from many whose vocations prevent daytime visits, so there would appear a sound case for extending the "open" hours.

The subject cannot be approached in too general a sense, but the following inter-related considerations are fundamental: (i) size of the object being viewed; (ii) brightness contrast between object and background; (iii) period normally given to studying the object; and (iv) brightness average of the object.

The standard of lighting effectiveness is the level of illumination, but the provision of adequate levels of lighting does not guarantee comfort. While visual acuity increases with higher value of illumination, scientifically arranged, it can be nullified by bad design with harsh highlights and heavy shadows.

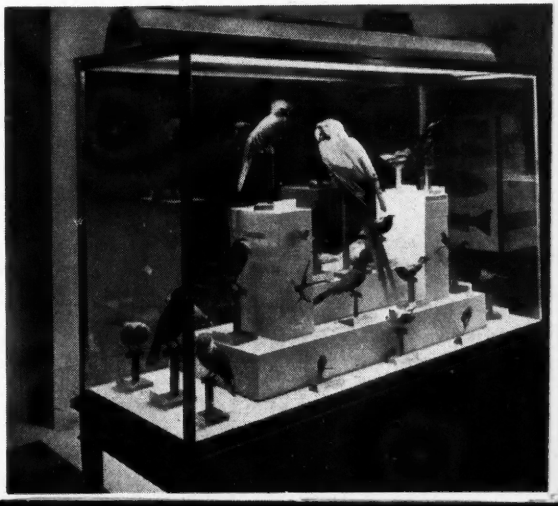
The first, and perhaps best, of the principles may be illustrated in dealing with showcases, usually occupying one-third of the main galleries or areas. Violent contrasts are not acceptable to the eye for long periods and museum authorities would be wise to consider carefully their selection of background cloth for showcases. We can only become visually aware of the presence of an object if it is brighter, or less bright, than the immediate background against which it is seen. It is important to link the value of correct colour contrast with that of brightness. Recommendations for classifying groups of exhibits, observing the foregoing rule, with the correct source and level of illumination are set out below:—

Showcase Recommendations.

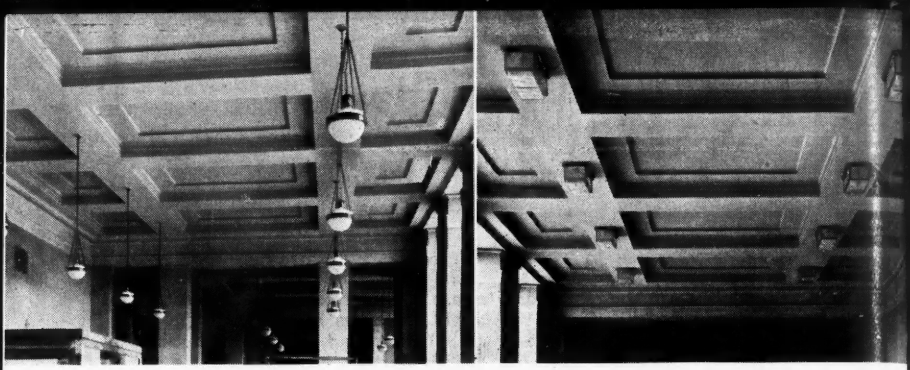
Exhibit	Colours	Background	Lumens/sq ft	Illuminant
Bird Life	Varied	Neutral grey	15	Fluorescent natural
Ceramics	White	Stone	12–15	Fluorescent daylight
Insects	Grey/Black	Buff	15–20	Fluorescent natural
Fish Life	Grey	Near white	10–12	Tungsten filament
Minerals	In classes coloured or white/black	Stone/near white	15	Fluorescent daylight
	Bronze/black	Stone	20	Fluorescent

Showcases have individual requirements; thus, some may need to be fitted with light sources around the edges and others (the majority) can be well lighted by standard trough reflectors (Fig. 1) immediately over the top cover glass.

Fig. 1.—Fluorescent trough reflector fitted over the top cover glass of a showcase



* Metropolitan-Vickers Electrical Co., Ltd.



Figs. 4 and 5.—Illustrating typical examples of lack of harmony (left) and harmony (right) with rectangular structural features

With vertical or sharp angled backgrounds, care must be taken to avoid fall-off in illumination toward the lower part of the case, but if good general lighting in the gallery is provided this difficulty is mitigated, as shown in Figs. 2 and 3. The former (left) shows general illumination of 0.2 lumen/sq ft with an average showcase level of 12 lumens/ sq ft, thus giving a diversity of 1:60. The latter (right) is the same with general illumination of 3.5 lumens/sq ft. For comfortable seeing conditions the diversity between the illumination in the showcase and that in the general areas should be of the order of 3:1.

While some statues in British museums occupy central positions, most are on stairways or in alcoves and room corners. How little attention they create was evident during visits to many of the best-known museums. They should be attractive items of display yet, almost without exception, are in obscurity. An opportunity presents itself here for dual purpose lighting, *i.e.*, the exhibit and the surrounding areas. The practised illuminating engineer knows the need for and value of directional lighting, to control and reveal the correct contour. Clear outline is important and is usually obtained by some background lighting from below, while forward illumination is seldom achieved satisfactorily from one source. Flatness must be avoided, but usually two diffusing floodlights can be adjusted to reproduce true muscular line and good contour.

Murals are a more simple item, usually requiring lighting from in front and below. The fitting should be mounted at a height above the floor equal to the height of the mural and out from the wall one-quarter of that distance. This is a guiding principle, given good general lighting.

In the United States, where there are some 400 museums, there is a renaissance which has clearly manifested the desire

Figs. 2 and 3.—Good general lighting mitigates fall-off in showcase illumination

of museum authorities to seek different effects from artificial lighting, while avoiding any one spectral quality of light. Economics may dictate progress in this way in Great Britain for some time to come, yet this does not excuse our own authorities from their responsibility to make museums far more attractive. Good lighting with dramatic emphasis can achieve much in this way.

Before the subject of general display areas is left one important æsthetic principle should be considered. A somewhat wide problem is presented with perhaps no single answer, mainly because many museums are of antiquated interior design, so that no standard consideration may be postulated. There is still an abundant use of drop pendants, usually spherical with high absorption factors and very little controlled distribution. These fittings are often out of harmony with the interior design; again, the old conception of mounting height was to ensure an abundance of chain to allow the unit to hang as near as possible to the floor. Typical examples (Figs. 4 and 5) illustrate how the same interior can be greatly changed by using modern directional units to "punch" the illumination where it is most required and also ensure harmony with rectangular features of the building. The old scheme using 200 W lamps was improved by 80 per cent with 300 W lamps in similar positions. Wider spacing could be adopted to match the original consumption and still give more illumination by control of the light flux through prismatic panels.

Linked with the change-over described above, Fig. 6 shows how pendant light sources often "match" the viewer's eye level, causing reflected images of fittings which distract the eye and impair visual acuity. One solution is to mount all general lighting units as high as possible, although this does not help when low horizontal showcases are viewed from above. Museum authorities should see that showcases are carefully sited with the latter type against the wall.

In art galleries the lighting of paintings, etchings and tapestries is a two-dimensional consideration only, as the artist has already established shadows and highlights. Two problems arise: (i) siting the sources, and (ii) retaining the colour harmony of the subject.

The first is primarily a matter of geometry. The level of illumination falling on the exhibits must be governed

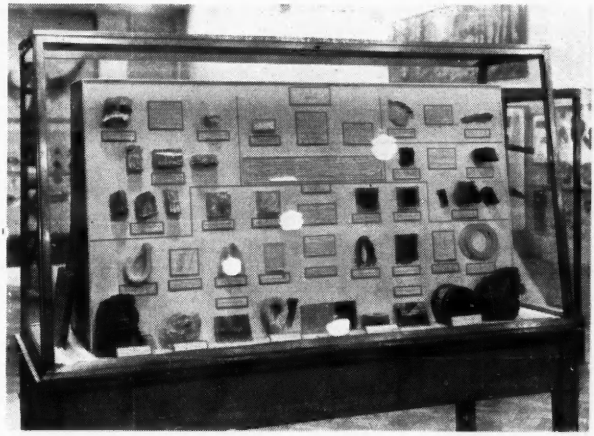
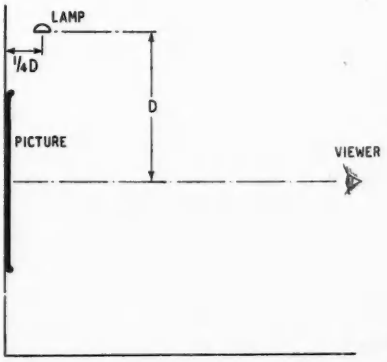


Fig. 6.—Example of distracting reflected images upon the glass of a showcase

Fig. 7.—Dimensional siting of local light source for treating picture on wall



and should not be exceeded by the light falling on the viewer; the lamps must be sited so that the viewer, standing or sitting, is not subjected to reflected glare from the glass front or semi-specular material forming the particular exhibit.

If local lighting is adopted, each source should be placed so that the distance from the wall bearing the exhibit to the source is one quarter of the height of the source above the centre of the exhibit (Fig. 7).

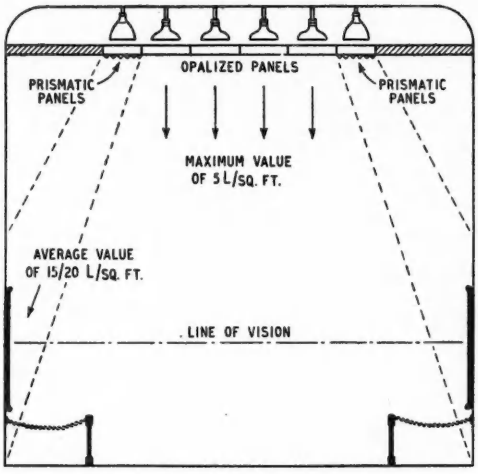
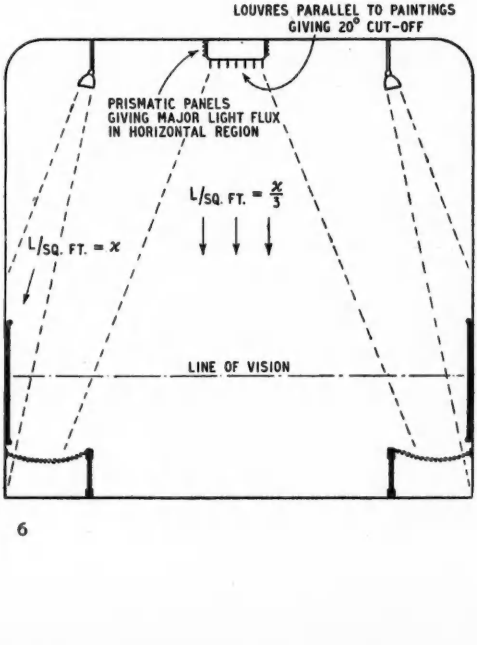


Fig. 8.—Picture gallery illumination through false ceiling

Fig. 9.—Art gallery lighting without the false ceiling


LOUVRES PARALLEL TO PAINTINGS GIVING 20° CUT-OFF
PRISMATIC PANELS GIVING MAJOR LIGHT FLUX IN HORIZONTAL REGION
L/SQ. FT. = x/3
L/SQ. FT. = x
LINE OF VISION

When a general overhead scheme is suitable, there are several accepted practices. Sources may be placed in a cornice to provide totally indirect light, but if paintings are glass fronted the result may be unsatisfactory. Schemes allowing more scope for the illuminating engineer (provided a false ceiling is available) are shown in Fig. 8 and without a false ceiling in Fig. 9.

A more important problem is that of good colour rendering. The author's experience suggests that non-objective paintings may be satisfactorily viewed under fluorescent lighting without sense of colour distortion. On the other hand, paintings of scenes and portraits require special lighting and the best results have so far been obtained with a combination of fluorescent and tungsten lamps in a "blend ratio" of 60-40 lumen output. It is, however, impossible to generalize, since the artist's work is invariably created in daylight. Fluorescent lamps, not having a continuous spectrum and being somewhat removed from the near red "warm" region, cause cold colours to respond better than others. Nor does the standard tungsten lamp fulfil all requirements for, although its spectrum is continuous, there is a preponderance of red in it.

The earlier reference to "dramatic" possibilities with artificial lighting must be dissociated from art gallery schemes. Remember that the artist has already created his emphasis and "sense" in the

original painting; without care, artificial lighting can destroy his work. The important thing is to have sufficient light on the painting and 15 and 20 lumens/sq ft should be the minimum value measured at the centre of the exhibit.

A word regarding the illumination of tapestries, usually covering large areas of walls. It is very easy to create a "spotting" result if care is not taken to site the light sources sufficiently far away from the tapestries. Remember that the greater degree of light absorption of such exhibits calls for good spacing/height ratio and, if possible, continuous troughing should be adopted. Much depends on the "average brightness" of the tapestry, but 10-15 lumens/sq ft should provide good results.

At present, no recognized code exists for recommended colours of gallery walls. The colour tone of paintings is widely varied and no one colour of wall can afford the ideal background. At present neutral or dull tones (such as green/grey or blue/grey) are used. This is a subject on which the Colour Group, illuminating engineer and Museum Association should collaborate.

One should recall the great progress of the electric lamp industry in quite recent years. New lamps are constantly reducing the matter of museum and art gallery lighting from a complex subject to one of standard calculation.

It is certain that reasonable contrast is effective in drawing attention to displays and exhibits, but museum directors do not yet seem to have grasped the true value of good general illumination to provide a cheerful and welcome atmosphere in which people may linger as long as they wish while deriving educational value from the exhibits.

I have stated that the Americans have 400 museums, the majority of which have been equipped with first class lighting. Scarcity of electrical energy and capital cost of elaborate schemes may retard progress in this country for some years to come, but directors and curators should try to approach this matter by easy stages, for a careful survey of many of our museums has established an urgent need for "spring cleaning" the existing artificial lighting systems with so often "unused" wattage and much wastage of energy.

I would like to thank the director and curator of the National Museum of Wales for the many facilities granted and help in carrying out experiments.

F.B.I. IN CANADA

TO help strengthen British industry's contacts in the Canadian market the Federation of British Industries has opened offices in the Royal Bank Building, Toronto. Mr. Hugh D. Scully, who has just retired from the post of Canadian Consul-General in New York, is to act as Canadian adviser to the F.B.I., with Mr. J. H. C. Mahaffy as general manager. To take up this position Mr. Mahaffy has just resigned from the post of executive vice-president of the Commodity Prices Stabilization Corporation in Ottawa. The close co-operation between the Federation in London and the Dollar Exports Board will thus be paralleled by a close working liaison between the Dollar Sterling Trade Board recently formed by Mr. James Duncan and the Federation's Toronto office.

Recognizing the over-riding importance of increasing British exports to Canada, the Federation has decided that the comprehensive facilities offered by the new office will be available not only to direct members of the Federation but to all British producers wishing to enter to the Canadian market. A certain amount of office space is available to representatives of British interests and Mr. Moir Mackenzie, deputy director-general of the F.B.I., who has just returned from a visit to Canada, points out that there is a shortage of office accommodation in Canada and urges manufacturers to make up their minds quickly if they wish to take advantage of further space which it is expected will become available during the current year in the Royal Bank Building, Toronto.

At a meeting held in London on Tuesday to announce the new facilities Sir Norman Kipping, director-general of the F.B.I., emphasized that there was no intention of competing with Canadian manufacturers but it was hoped that it would be possible to secure a diversion of some of the import trade now being done with the United States, which at present amounted to 72 per cent of the total.

New Year Honours

AWARDS TO ELECTRICAL MEN

IN the New Year Honours list published on Monday last there are a number of well-known men in the electrical and associated industries, from which we have selected the following:—

C.B.E.—Mr. J. R. Beard, M.Sc., M.Inst. C.E., M.I.E.E., senior partner, Merz and McLellan, consulting engineers, and a past-president of the Institution of Electrical Engineers; Mr. J. Eccles, M.M., M.I.E.E., M.Inst.C.E., M.I.Mech.E., chairman of the Merseyside & North Wales Electricity Board; Mr. J. J. Gracie, M.I.E.E., general manager of the engineering works, Witton, of the General Electric Co., Ltd., and chairman of the Greater Birmingham Local Employment Committee; Mr. L. G. Semple, M.I.E.E., lately Controller-General, Posts and Telecommunications, Control Commission for Germany, British Element, (now Regional Director, North Eastern Region, G.P.O.); Lt.-Col. H. B. Somerville, O.B.E., M.I.E.E., Regional Director, Northern Ireland Region, G.P.O.; Brigadier (temp.) H. W. Perryer, O.B.E., M.I.Mech.E., A.M.I.E.E., Royal Electrical & Mechanical Engineers; Mr. J. Anderson, O.B.E., M.I.E.E., chief scientist, H. M. Underwater Detection Establishment, Portland; and Mr. H. H. Bell, chairman, Melbourne & Metropolitan Tramways Board, State of Victoria.

C.B.—Rear-Admiral (L.) S. L. Bateson, C.B.E., A.M.I.E.E.

O.B.E.—Mr. T. Golding, A.M.I.E.E., manager of the Electrical Department of W. H. Allen, Sons & Co., Ltd.; Mr H. C. Jones, M.I.E.E., telephone manager, Liverpool, G.P.O.; Mr. F. J. Lane, M.Sc., M.I.E.E., transmission design engineer, British Electricity Authority; Mr. J. G. Pearce, M.Sc., M.I.Mech.E., M.I.E.E., F.Inst.P., director, British Cast Iron Research Association; Mr. J. V. Foll, managing director, Muirhead & Co., Ltd.; Mr. J. Rankin, F.C.I.S., secretary of the Merseyside & North Wales Electricity Board, and chairman, East Denbighshire Industrial Savings Council; Capt. G. W. Ogden, Director, Posts & Telegraphs Department, Sudan Government; Mr. A. W. H. Keen, A.M.I.E.E., deputy chief mechanical engineer, Crown Agents for the Colonies; and Lt.-Col. (now Colonel (temp.)) J. D. Haigh, M.A., A.M.I.E.E., Royal Corps of Signals.

M.B.E.—Mr. A. S. Brown, manager of the Electrical Department, Clarke, Chapman & Co., Ltd.; Miss O. M. Forbes, chief superintendent of women employees, Ferranti, Ltd.; Miss A. G. Gray, statistician, S.W. Scotland Division, British Electricity

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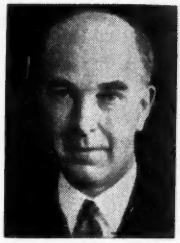
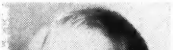
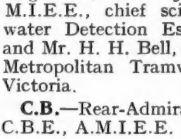


Mr. J. Eccles

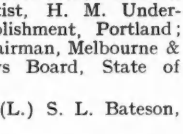


Mr. J. R. Beard

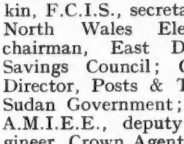
Mr. J. J. Gracie



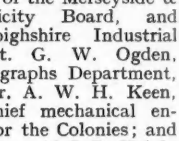
Mr. F. J. Lane



Lt.-Col. H. B. Somerville



Mr. T. Golding



Mr. J. Rankin

PERSONAL and SOCIAL

News of Men and Women of the Industry

EVERETT Edgcumbe Co. announce the following appointments: **Mr. W. Bamford,** B.Sc., M.I.E.E., to be director of sales, **Mr. J. J. McManus** to be director of technical production, and **Mr. W. E. House** to be chief sales engineer. All the above have been on the staff of the company for some years. Mr. Bamford joined the company in 1936 as sales engineer, while Mr. McManus has been manager of the Test Department since 1929. Mr. House joined the company in 1929 and has for many years been a member of the Sales Engineering Department.

Mr. John W. F. Warren, Middlesbrough, tells us that he has completed fifty years' membership of the Institution of Electrical Engineers and has been granted honorary life membership. Mr. Warren is nearly seventy-eight and during his career was responsible for the electrification of a number of shipyards, steelworks and engineering establishments in the North-East Coast area. He was one of the founders of Warren, Beattie & Co., Ltd. In later years Mr. Warren was concerned with the production of a steam separator. He retired from active business in 1939.

Capt. H. Leslie Dixon, of Leslie Dixon & Co. and Electradix Radios, has also received honorary life membership of the Institution of Electrical Engineers upon completing fifty years as a member.

Mr. K. Baumann retired from the board of the Metropolitan-Vickers Electrical Co., Ltd., on 31st December, and at the same time he resigned his position as chief mechanical engineer to the company. He is succeeded in these positions as from 1st January by **Mr. N. Elce,** M.Sc.Tech., M.I.E.E. Mr. Baumann received his technical education at the Federal Technical College of Switzerland at Zurich under Professor Stodola, later becoming his assistant. He joined Mètropolitan-Vickers in 1909 as turbine engineer to take in hand the de-

Mr. K. Baumann

Mr. N. Elce

Authority; Miss M. L. Limozin, private secretary to the deputy chairman (operations), British Electricity Authority; Mr. K. B. Ling, superintendent, Standard Telephones & Cables, Ltd., Treforest; Mr. R. V. Macrory, M.I.E.E., city electrical engineer, Londonderry; Mr. E. E. Page, station superintendent, Llanelly power station, South Wales Division, British Electricity Authority; Mr. W. R. Scott, M.I.E.E., chairman, Western District Committee, Scottish Board for Industry; Mr. J. B. Stevenson, works director, E.M.I. Factories, Ltd., Hayes, Middx.; Mr. G. W. Warren, physicist, research laboratories, General Electric Co., Ltd.; Mr. C. J. Whittall, in charge of the Admiralty Division, Elliott Brothers (London), Ltd.; Mr. H. W. Wilson, M.M., A.M.I.E.E., Admiralty liaison engineer, General Electric Co., Ltd.; Mr. E. V. Andlaw, A.M.I.E.E., A.M.I. Mech.E., city electrical engineer, Gibraltar; Mr. W. S. Hutchins, engineer in charge, Lusaka Electricity & Water Undertakings, Northern Rhodesia; and Major F. R. Peathey-Johns, B.Sc.(Eng.), A.M.I.E.E., Royal Electrical & Mechanical Engineers.

B.E.M.—Mr. A. J. Bradshaw, works foreman, Bromley, London Electricity Board; Mr. J. A. Coles, accident prevention officer, English Electric Co., Ltd.; Mr. J. Connor, D.C.M., mains foreman, Merseyside & North Wales Board, British Electricity Authority (St.Helens); Mr. W. H. A. Coles, inspector (engineering), G.P.O., Llanelly; Mr. W. A. E. Daborn, shop foreman, Submarine Cables, Ltd.; Mr. S. J. Gorvett, turbine room shift foreman, South Wales Division, British Electricity Authority (Pontypridd); Mr. W. J. Hillman, technical officer, Engineering Department, G.P.O. (North Harrow, Middx.); Mr. W. E. Read, boiler house foreman, Midlands Division, British Electricity Authority (Birmingham); and Mr. F. J. Sherry, sub-station foreman, Eastern Electricity Board.

velopment of the Rateau impulse turbine. The following year he was appointed chief engineer, Engine Department, and in 1912 was made chief mechanical engineer in charge of the mechanical products of the company. He was appointed a special director and member of the executive management board in 1927, and in 1931 was elected a director of the company. From July, 1947, he was chairman of the A.E.I. Engineering Committee.

Mr. Baumann has presented many papers, dealing mainly with turbine practice, to the I.E.E. and other Institutions. He has taken a pioneering part in the advance of steam operating conditions; as far back as 1932 he developed a back pressure unit of 35,000 kW at 3,000 r.p.m., to operate with steam at a pressure of 1,763 lb/sq in g. and a temperature of 932 deg F. Among his many inventions was one taken out in 1915 dealing with regenerative turbine heating, which laid the foundation of this now universally adopted practice. In 1916 he patented the multi-exhaust design now associated with his name. In the field of gas turbines Mr. Baumann, in co-operation with the M.A.P. and later the M.o.S., was responsible for the design of the range of Metropolitan-Vickers axial-flow type jet propulsion engines. The F2, the earliest type, was actually the first axial-flow type to be flown in this country. Under his guidance larger and improved jet engines were developed, first the Beryl and later the Sapphire. He was also responsible for the installation of the first gas turbine to be applied to ship propulsion in the M.G.B.2009. He contributed numerous inventions in the gas turbine field, including the thrust augmentor for jet engines.

Mr. Elce joined M-V as a college apprentice in 1920 and spent his first year in post-graduate research on nozzle efficiency at Manchester, for which he received the degree of M.Sc.Tech. In 1922 he joined the Mechanical Engineering Department under Mr. H. L. (now Sir Henry) Guy and undertook steam nozzle and blade research work. From 1926 until 1941 he was responsible for the company's industrial turbine applications and for many noteworthy turbine installations; towards the end of this period he was also responsible for the company's work on marine turbines. In the last war the company formed a new section for special work (under the D.S.I.R.) in connection with the military use of atomic energy, and in this connection Mr. Elce visited the United States as a member of the British team under Sir Wallace Akers. In 1944 he was appointed assistant to Mr. Baumann, with particular interest in power developments and staff training, becoming assistant chief mechanical engineer in 1948. He is an honorary consultant to the Department of Atomic Energy and a member of the Thermodynamics Committee of the Mechanical Engineering Research Board of the D.S.I.R.

Mr. H. W. Bosworth, chairman and managing director of Lancashire Dynamo & Crypto, Ltd., after forty-three years' service with the company, retired from the position of managing director on 31st December. He will continue to act as chairman and director of the company and of the associated and subsidiary companies. We regret to learn that Mr. Bosworth is seriously ill at King's College Hospital, where he is undergoing an operation.

Mr. H. G. Palfreman, deputy sales manager to Bill Switchgear, Ltd., has now been appointed sales manager to the company. Mr. Palfreman was educated at Wylde Green School, Sutton Coldfield, and Aston Commercial School. He finished at Sutton Technical College before joining the sales staff of Bill Switchgear, Ltd., in 1937, with whom he has since held a number of appointments, including that of Southern Counties representative.

Mr. H. G. Palfreman

Mr. Norman T. Smith, former borough electrical engineer, Warrington, is home on a short holiday after seven months as manager of the Nova Scotia Heat, Light and Power Co.

Mr. F. C. Dewell, Associate I.E.E., at present telephone engineer and traffic manager in the Directorate-General of Posts and Telegraphs, Baghdad, will shortly be leaving for England to join the General Electric Co., Ltd. For the last six years he has been associated with the development and maintenance of telecommunications in Iraq.

Mr. W. Fraser, M.I.E.E., chairman of Scottish Cables, Ltd., has made a gift of £5,000 to the Royal Technical College, Glasgow, to assist in the provision of equipment for high-voltage research.

Mr. H. B. McAuslan has been appointed general sales manager of the National Gas & Oil Engine Co., Ltd. Before the last war Mr. McAuslan was superintendent engineer to the Irrawaddy Flotilla Co. of Rangoon; during the war he held an appointment as lieut.-colonel in India. Since demobilization he has been superintendent engineer to the British and Burmese Steamship Navigation Co., also holding the position of technical adviser to the Irrawaddy Flotilla Co. Mr.

J. C. **Greaves,** who has retired from the position of London manager owing to ill-health, had been with the company since 1920. **Mr. F. D. Langley,** A.M.I.Mech.E., has taken over the London office from 1st January. Mr. Langley joined the company in 1930 after eight years with its South African agents, and has supervised the installation of large engines in many parts of the world. For some time past he has been the National Co.'s resident engineer for the Colne Valley Sewerage Board contract.

Mr. F. S. Inglis, M.B.E., M.I.E.E., has been appointed joint general manager of Thomas De La Rue & Co., Ltd. (Plastics Division), at their factory at West Chirton, Northumberland. Mr. Inglis joined the County of London Electric Supply Co. in 1930 as a draughtsman, was appointed first assistant to the district mains engineer, Camberwell, in 1933 and in 1938 became district mains engineer at Romford, covering the boroughs of Romford and Dagenham. In April, 1942, he was "loaned" to the Ministry of Aircraft Production and was engaged as a technical officer at Telecommunications Research Establishment, Malvern, until November of that year. He was then appointed superintendent of R.P.U., a factory near Bournemouth engaged in producing radar equipment, particularly for Bomber Command. For this work he was awarded the M.B.E. In February, 1946, he returned to the County of London Co. as regional mains superintendent of the S.W. Region. Following a brief spell under the London Electricity Board Mr. Inglis joined Thomas De La Rue in November, 1948, as assistant works manager and in January, 1949, he was promoted to works manager.

Miss A. E. Wolley (E.A.W. diploma) has been appointed senior demonstrator on the staff of Elexcel, Ltd., Liverpool. Miss Wolley was formerly with the Shropshire, Worcestershire and Staffordshire Power Co. as housecraft adviser for the Southern Division.

Dr. R. F. L. Logan has been appointed medical officer to Oldham & Son, Ltd., of Denton, Manchester. Dr. Logan, who is a Nuffield Foundation Medical Fellow, will continue to hold a staff appointment at the Manchester Royal Infirmary, where he lectures, under Professor Lane, on industrial health.

Sir Claude Gibb, chairman of C. A. Parsons & Co., Ltd., Heaton, Newcastle-on Tyne, left Britain on 1st January for Calcutta to attend the official opening of a new power station. The company has supplied about £3,000,000 of equipment for this station.

On 23rd December 400 members and friends of the Benjamin Social and Athletic Club **(Benjamin Electric, Ltd.),** attended the annual dance and cabaret at the Regal Ballroom, Edmonton. Dancing continued until midnight, and spot and novelty prizes were presented. The management of the company was represented by Mr. H. G. Campbell (assistant managing director) and Mrs. Campbell; Mr. A. E. Iliffe (director & general sales manager); Mr. H. L. Smith (commercial director) and Mrs. Smith; and Mr. L. R. Kavanagh (works director).

An interesting ceremony took place on 21st December at Telcon Works, Greenwich, when **Sir Geoffrey Clarke,** who retired at the end of the year from his post as managing director, bade farewell to the employees of the Telegraph Construction & Maintenance Co., Ltd., Submarine Cables, Ltd., and Selborne Plantation Co., Ltd. In a brief speech Mr. J. N. Dean, who succeeds Sir Geoffrey, paid tribute to Sir Geoffrey's untiring efforts in the interests of the companies during his twenty-four years of office and expressed appreciation for the solicitude which has always been shown for the welfare of all employees and for the active work which he has done to create good will and team spirit in the works. On behalf of all employees he presented to Sir Geoffrey several valuable first editions as a token of their gratitude and esteem and as a parting gift on his retirement. Sir Geoffrey Clarke in his reply acknowledged the support and unwavering loyalty he had received on all sides, which support had enabled the organization to progress to its present important position.

The social club of **F. Westerman (Wholesale), Ltd.,** held their annual Christmas party at Knowle recently, and opportunity was taken of the starting of the Midlands television station on that date to provide three sets so that the staff and visitors could see the opening ceremony. This was followed by dancing, party games and entertainment. Mr. F. Westerman presented the snooker handicap cup to the winner, Mr. K. Ward, manager of the radio and domestic appliances stores.

Christmas festivities at **Venner Time Switches, Ltd.,** included the annual dance for employees and friends and a children's party, both of which were held in the canteen on the Kingston By-pass. Although sponsored by the management, both events owe their success to the individual efforts of the company's social and athletic committee. The proceeds from the dance went towards providing tea and presents for the children on the following day.

An interesting ceremony recently took place at the Hollinwood Works of **Ferranti,**

Ltd., when Sir Vincent de Ferranti presented sixty-two long-service employees with certificates and gold watches.

Mr. J. W. Hargreaves retired from the position of general manager of the Renfrew and Dumbarton Works of Babcock & Wilcox, Ltd., at the end of December, and he has been succeeded in this position by **Mr. I. M. Lyon,** assistant general manager. **Mr. A. S. Peacock** has been appointed assistant general manager of the Renfrew and Dumbarton Works as from 1st January. Mr. Peacock previously held the position of manager of the industrial sales section in the London office of the company.

OBITUARY

Mr. A. C. MacWhirter.—The death occurred on 28th December at the age of seventy-four of Mr. Anthony Clark MacWhirter, M.I.E.E. Mr. MacWhirter, who was the eldest son of the late Mr. William MacWhirter, after training with his father and gaining experience with the General Electric Co., of America, opened a branch of his father's firm, Wm. MacWhirter & Sons, in Cardiff, about 1906. He was chairman of the Western Centre of the Institution of Electrical Engineers in 1921, and was for thirty-four years treasurer of the local branch of the Association of Mining Electrical & Mechanical Engineers. He was well known in E.C.A. circles, both in London and Cardiff.

Mr. P. J. Humphrey.—The death has occurred at Shotley Bridge, Co. Durham, at the age of sixty, of Mr. P. J. Humphrey, a district engineer with the North Eastern Electricity Board (and formerly with the North Eastern Electric Supply Co., Ltd.) until his retirement last August.

Mr. G. A. Pemberton, manager of the Acton branch of Brown Brothers, Ltd., died suddenly on 22nd December, as the result of a heart attack. Mr. Pemberton joined Brown Brothers in 1924, and served as manager of their branches at Dublin, Leeds, Southampton and Manchester, before taking up his appointment as manager of the Acton branch last February.

Lt.-Col. Sir Henry McMahon.—The death occurred on 29th December at the age of eighty-seven of Lt.-Col. Sir (Arthur) Henry McMahon, G.C.M.G., G.C.V.O., K.C.I.E., C.S.I., who, among his many activities, was chairman of the China and Japan Telephone and Electric Co., Ltd., and the Oriental Telephone and Electric Co., Ltd.

Mr. Selwyn S. Grant.—The death occurred last week of Mr. Selwyn Seafield Grant, O.B.E., A.C.G.I., M.I.E.E., chief electrical engineer of the Whitehall Securities Corporation, Ltd., and a director of Whitehall Electrical Investments, Ltd., and its subsidiaries. He was chairman of the former Provincial Electrical Supply Association from 1934 to 1948.

Mr. Grant was born in India in 1877 and was educated at St. Paul's School and the Central Technical College (City & Guilds). He was successively with Siemens Bros. & Co., Ltd., the British Electric Traction Co., Ltd., J. G. White & Co., Ltd., the Ministry of Munitions and the Whitehall Securities Corporation, Ltd. He was chairman of the Devon & Cornwall Sub-Centre of the I.E.E. in 1943-44.

A memorial service is to be held at St. Margaret's, Westminster, at noon on Thursday next, 12th January.

Mr. R. J. MacLeod.—The death occurred on 27th December at the age of sixty-seven of Mr. Robert James MacLeod, chairman and managing director of the Power Plant Co., Ltd.

Mr. J. W. Flower.—The death occurred on 20th December at the age of seventy-eight of Mr. John William Flower, A.M.I.E.E., late of the Atlas Diesel Co.

WILLS

Mr. E. E. Briggs, M.I.Mech.E., A.M.I.E.E., F.Inst.F., chairman and governing director of Ernest Briggs, Ltd., engineers and contractors, who died on 25th August last, left £6,584 gross (£6,294 net).

Mr. H. C. Price, manager of the Birmingham and District sales office of George Ellison, Ltd., who died on 28th August last, left £22,166 gross (£21,914 net).

Mr. H. A. Nevill, M.I.E.E., for many years engineer and manager of Peterborough electricity undertaking, who died on 15th September last, left £3,305 gross (£2,916 net).

Mr. R. J. Jamison, Northern Area sales manager of Simon-Carves, Ltd. (Power Plant Dept.), who died on 11th August last, left estate in England and Northern Ireland valued at £13,085.

Mr. J. Frith, M.Sc., M.I.E.E., late partner in Cramp & Frith, consulting engineers, Manchester, who died on 12th August last left £9,891 gross. (£9,834 net).

First Canadian Subway

WORK started recently on the Toronto Transportation Commission's Yonge Street Subway, the first Canadian "Underground" project. When completed it will comprise approximately a mile of subway under the street, 1¼ miles of roofed-over route off the street, and 2¼ miles of open cut. At that point a bus route will run for about 3¾ miles to the end of what is now a street-car line.

Electricity in the 'Fifties

SOME NOTABLE CENTENARIES

By G. J. S. King

THE pages of *Punch* of bygone days are invaluable as a reflection of contemporary thought, and various issues a century ago show how the mid-Victorians reacted to the novelty of lighting by electricity. One item, for example, reads:—

> "The Electric Light is still in a comparative state of darkness, so we will endeavour to throw a little light upon it, and show what there is in it . . . . There is nothing explosive in its nature, and you may have any quantity you like without blowing your roof off, or sending your front parlour into the house opposite. It can be increased unlimited; so . . . . we shall be able to mimic the brightest mid-day on the darkest midnight . . . . Fire Offices will be obliged to lower their rates of insurance, on account of the less danger of fire . . . . Who knows, we shall have electric matches? And anyone who wants a light for his cigar will have to say, 'Could you oblige me with a little electricity?' . . . . One great benefit is that the Electric Light is sure to lower the extremely high prices of the Gas Companies, if it does not extinguish the vile monopoly altogether, and number the Gas with the 'Light of other days.'"

First Submarine Cable

Another item in *Punch* early in 1850 comments upon the news that an "electric telegraph between France and England is about to be established in good earnest," and the confident hope is expressed that "international good feeling will prove the continually augmenting result of this *entente électrique*."

The historic event to which reference was thus made occurred on 28th August, 1850, for on that day John Watkins Brett successfully established telegraphic communication between England and France. The *Goliath* set out from Dover, uncoiling the wire as she sailed. In the evening she arrived off the French coast and ran the wire up the cliff at Cape Grisnez to its terminal station. But although messages were duly sent in both directions, the wire was snapped in two and the final opening was deferred until the following year. Notwithstanding the temporary breakdown the importance of this first of all submarine cables was fully realized and one contemporary authority described the electric telegraph as one of the great scientific powers by which the world was now to be governed.

William Petrie and William Edwards Staite had for some years co-operated in their technically successful but financially unfortunate pioneering work in electric illumination and on 6th February, 1850, their paper on "Improvements in the Electric Light" was read before the Society of Arts.

Faraday and Atmospheric Magnetism

In 1850 Faraday sent two memoirs on atmospheric magnetism to the Royal Society, in which he dealt with the effect of heat and cold on the magnetism of the air and the consequent action on the magnetic needle. (Sir) Edward Sabine, who was subsequently President of the Royal Society, published a paper that year "On the Means adopted in the British Colonial Magnetic Observatories for determining the Absolute Values, Secular Changes, and Annual Variation of the Magnetic Force." Fellowship of the Royal Society was the reward of James Prescott Joule, whose experiments had resulted in his discovery of the mechanical equivalent of heat.

John Tyndall published in the same year the result of his investigations "On the Magneto-optic Properties of Crystals and the relation of Magnetism and Diamagnetism to Molecular Arrangement," and the account of his researches at the meeting of the British Association at Edinburgh in July that year aroused a great deal of interest. Another important paper read to the Association was William

John Rankine's "Elasticity and Heat."

Sir William Snow Harris began in 1850 publication of his "Magnetism" (following his previous handbook on "Electricity"); and Charles Vincent Walker's "Electric Telegraph Manipulation" was published. Alfred Smee's researches in electrical physiology were followed by the publication that year of "Instinct and Reason"; and in February Clausius formulated independently Joule's conclusions on Carnot's theory of the motive power of heat.

It was in 1850 that Armand Fizeau measured the speed of electricity and that the American, Page, demonstrated a 5 h.p. electro-motor. Ruhmkorff's magneto-electric induction coil was constructed; and Allman conducted his electric lighting experiments at the Polytechnic Institution. From 1850, moreover, may be dated the electrotyping with copper of printing types and woodcuts.

(Sir) William Siemens was awarded a prize by the Society of Arts in 1850 for his invention of the "chronometric governor." David Edward Hughes (who was to become famous as the inventor of the type-printing telegraph and the microphone and later became President of the Institution of Electrical Engineers) began his career as a professor of music in America; and (Sir) William Crookes became, at the age of eighteen, an assistant in the Royal College of Chemistry. It was in 1850, moreover, that Josiah Latimer Clark became an assistant engineer to the Electric and International Telegraph Company—the beginning of the career which resulted in the discovery of the "Clark cell" and other electrical inventions, and the publication of such works as "Electrical Measurement."

"Annals of Electricity"

Louis Joseph Gay-Lussac, the eminent French scientist, whose numerous achievements included researches in terrestial magnetism, died on 9th May, 1850. On 4th December William Sturgeon died. He began studying electricity while a ranker in the army, and it was said that cadets of the R.M.A. "used to swarm on to the barrack field to get shocks from his exploring kites." After leaving the service he wrote papers on thermo-electricity, invented the soft-iron electro-magnet, constructed an electro-magnetic rotary engine, produced an electro-magnetic coil machine, and, in fact, was responsible for practical inventions covering the whole range of electrical science. He also established a monthly journal known as "The Annals of Electricity," which was the first British periodical specializing in electrical subjects.

Among Continental celebrities born in 1850 whose names are eminent in electricity were Augusto Righi (27th August), Italian physicist, who was noted for his researches in electricity, magnetism, photo-electricity, and radio-activity; and Karl Ferdinand Braun (6th June), German physicist, who made a number of improvements in radio-telegraphy and devised Braun's cathode-ray tube and the wave circuit.

John Perry's Birth-year

An outstanding celebrity born that year (on 14th February) was John Perry, who was responsible for the invention of many electrical instruments, and became President of the Institution of Electrical Engineers. He was also author of numerous scientific papers, including "The Electric Conductivity of Glass as Dependent on Temperature"; "On Electrolytic Polarisation"; "Resistance of Galvometer Coils"; "Contact Theory of Voltaic Action"; "Ratio of Electric Units"; "The Future Development of Electrical Appliances," etc.

William Garnett, who was born on 30th December, 1850, and was educational adviser to the L.C.C., was author of "Elementary Dynamics," and "An Elementary Treatise on Heat," and chairman of the Electric Lighting Committee of the Royal Jubilee Exhibition at Newcastle. Oliver Heaviside (13th May) spent a lifetime in electrical research and gave his name to the "Heaviside layer." He published two volumes of "Electrical Papers," and two volumes of "Electromagnetic Theory."

Alfred Rosling Bennett, who was also born in 1850, was a noted telephone engineer. He invented the telephonic translator, the caustic alkali and iron battery, and the convection mill; and was author of "A Cheap Form of Voltaic Battery," "An Electrical Parcels Exchange,"

"A Convection-Scope and Calorimeter," etc. Ernest Octavius Walker (16th July) was Superintendent of Telegraphs in Ceylon, and author of papers upon earth currents in the I.E.E. *Journal*.

Among other celebrities born in 1850 were: Sir George Stegmann Gibb (20th April), managing director of the Underground Electric Railways Co. of London; Edward Archdale (22nd March), a Privy Councillor, who laid submarine cables in various parts of the world; Charles Ranlett Flint (24th January), president of the United States Electric Lighting Company; and Sir John Benton (5th August), whose irrigation work in the Dargai valley provided power for the electrification of the Nowshera-Dargai Railway.

In the year 1750 Gowin Knight, who was famous for his magnetic researches, read before the Royal Society a paper in which he declared that in investigating the mariner's compass he had found compass needles from the leading makers defective, owing to the shape of the needles. Another celebrity who read a paper before the Royal Society that year was the great John Canton, whose subject was "Method of Making Artificial Magnets without the use of Natural Ones"; while (Sir) William Watson, perhaps the foremost electrician in the country at that time, communicated to the Royal Society in 1750 "several papers concerning a new semi-metal called platina."

Canton was the first Englishman to repeat successfully Benjamin Franklin's electrical experiments—a reminder that it was in 1750 that Edward Cave, famous as the patron, friend, and publisher of Samuel Johnson, placed one of Franklin's lightning conductors on the eastern tower of his Clerkenwell offices—a tribute to his personal friendship with Franklin. There was published that year J. Michell's "Treatise on Artificial Magnets."

A final name in our review is that of George Adams, "the Younger," who was born in 1750. Adams was a noted maker of mathematical instruments, and was author of "An Essay on Electricity, to which is added an Essay on Magnetism."

WORLD POWER CONFERENCE

PROGRAMME FOR LONDON GATHERING

ENERGY resources and the production of power is to be the theme of the fourth World Power Conference, which is to take place in London from 10th to 15th July, under the presidency of Dr. W. F. Durand (U.S.A.) with Sir Harold Hartley as the chairman of the International Executive Council.

Mr. Harold Hobson is chairman of the Programme and Papers Committee, Mr. D. W. Coates is chairman of the Finance Committee, Col. C. M. Croft is chairman of the Reception and Entertainments Committee, and Mr. C. H. Gray is the general secretary.

The provisional programme already lists 159 papers from 27 different countries (23 from the U.K., 20 from the U.S.A., and 18 from France), classified into: Division I, energy resources and power development, a single report from each National Committee; Division II, preparation of fuels, solid, liquid, gaseous; Division III, power production, steam raising, steam utilization, internal combustion engines, gas turbines, water, wind and other sources.

The papers will not be read; instead, to allow more time for discussion, reporters will summarize groups of papers and suggest topics for discussion. These general reports as well as individual papers will be printed for circulation before the meetings and, with summaries of discussions, will eventually be published as bound transactions.

The technical sessions will be at the Institutions of Civil, Mechanical and Electrical Engineers, which will be equipped for simultaneous interpretation, English and French. The opening session in the afternoon will be at the Central Hall, Westminster, to be followed by a Government reception at the Science Museum, South Kensington, in the evening. On the second evening there will be a reception at the Guildhall and an official banquet on the fourth evening.

Thirteen alternative post-conference study tours and a large number of day and half-day excursions out of London are planned for the week beginning 16th July.

The provisional programme and membership application form (£6 each person, excluding excursions) are now obtainable from the W.P.C. Offices, 414, Cecil Chambers, 76-86, Strand, London, W.C.2. Telephone: Temple Bar 1234, Ex. 473.

Cable Sectionalizing Joint

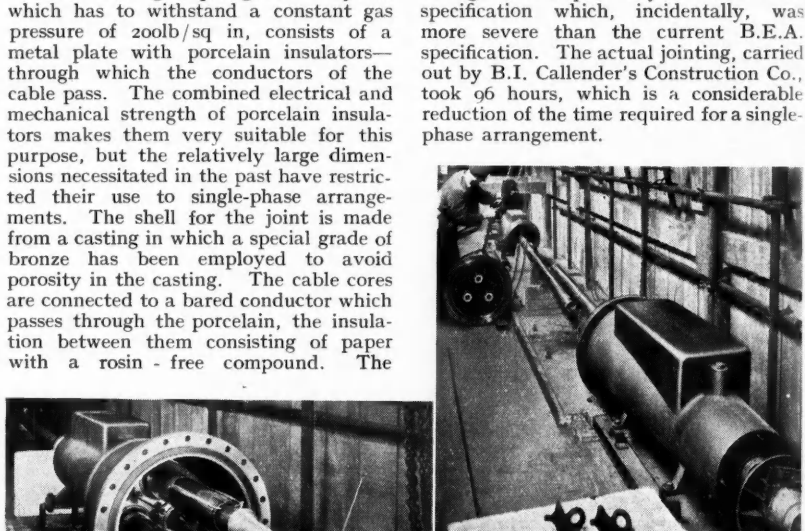
FOR USE BETWEEN BATTERSEA AND NORTH HYDE

A POWER cable joint that performs a duty for which three separate single-phase components have hitherto been required has been designed and constructed by British Insulated Callender's Cables, Ltd. It consists of a three-phase sectionalizing joint to subdivide—pneumatically— a 66 kV, 3-core, 0.4 sq in i.p. cable installed between Battersea power station and the Southern Electricity Board's distributing centre at North Hyde. The three cables on this important link are capable of transmitting 150 MVA over the 15-mile route.

The insulating diaphragm of the joint, which has to withstand a constant gas pressure of 200lb/sq in, consists of a metal plate with porcelain insulators—through which the conductors of the cable pass. The combined electrical and mechanical strength of porcelain insulators makes them very suitable for this purpose, but the relatively large dimensions necessitated in the past have restricted their use to single-phase arrangements. The shell for the joint is made from a casting in which a special grade of bronze has been employed to avoid porosity in the casting. The cable cores are connected to a bared conductor which passes through the porcelain, the insulation between them consisting of paper with a rosin - free compound. The earthed screen on the cable core is terminated in the conventional manner with a paper roll stress cone. The shell is filled with compound and provided with an air dome, and arrangements are made to maintain an equilibrium of gas pressure between the air dome and the cable.

The assembled joint has an overall length of 11ft with a maximum diameter of 27in and the weight of the assembled castings is 19½cwt.

The present design was developed in the company's own research laboratories and has been submitted to the full overvoltage tests required by the customer's specification which, incidentally, was more severe than the current B.E.A. specification. The actual jointing, carried out by B.I. Callender's Construction Co., took 96 hours, which is a considerable reduction of the time required for a single-phase arrangement.



Two stages in the construction of a three-phase 66 kV cable sectionalizing joint at the B.I. Callender's Wood Lane Laboratories

Queensland's Programme

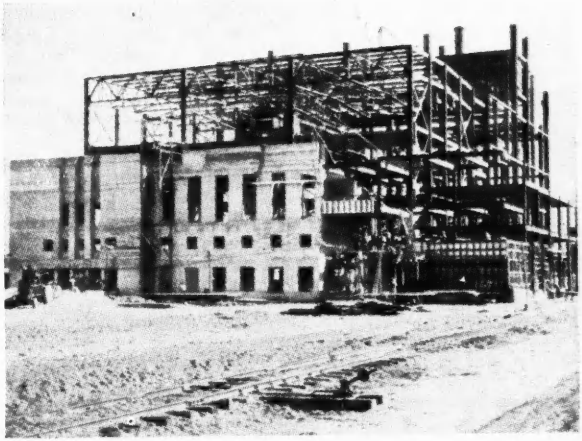
Electricity Fundamental to Prosperity

WORKS in hand or to be begun during the current financial year by public electricity authorities in Queensland are estimated to cost some £15,000,000. This large programme, says the twelfth annual report of the State Electricity Commission, has been initiated because of the Government's firm conviction that electric power is fundamentally important to the prosperity of the modern state.

Serious difficulties through lack of sufficient generating plant have been experienced in other States of the Commonwealth. Mr. S. F. Cochran, Commissioner for Electricity Supply, considers that these can be avoided in Queensland, but only by giving first priority to materials for new power schemes. Where Australian sources fail it is imperative to go to the market that can deliver the goods in the shortest possible time, without the usual regard for cost.

On this point the report mentions that the importation of insulators from abroad has considerably relieved the demand on Australian manufacturers. Prompt deliveries of copper cable from Great Britain have been of much assistance. Of a bulk order for copper cable valued at £260,000, about 25 per cent was awarded to British manufacturers. Practically all the overseas copper has now arrived, and it is expected that the lag in Australian supplies should be overtaken this year. With regard to transformers, Australian sources are several years behind in production, and it has been necessary to import plant at considerably greater cost. Of 429 transformers (valued at £155,000) ordered by the Commission, 20 per cent had been shipped at the date of the report. For power house construction, orders were placed in Great Britain for 253 tons of reinforcing steel valued at £10,250 and 523 tons of structural steel (£21,000).

All parts of the State are served by the programme of works undertaken by the Commission. It covers the construction of new power stations by the Brisbane City Council and the City Electric Light Co.



General view of the new generating station erected at Howard for the Wide Bay Regional Electricity Board as it appeared in July, 1949

(Bulimba "B" and Tennyson, respectively) as well as at Howard, Rockhampton and Townsville. For North Queensland a new era of electrical development will be opened if the Tully Falls hydro-electric scheme is found practicable.

New plant installed or likely to be completed soon includes 57,500 kW of steam and 9,427 kW of oil equipment. In addition there is 206,000 kW of steam plant on order or about to be ordered, and schemes under consideration may add 120,000 kW of steam and 42,000 kW of hydro-electric capacity.

Statistics given in the report cover the year ended 30th June, 1948, during which 413.3 million kWh was generated (against 349.4 million in 1946-47), and 198.6 million kWh (158.5 million) was purchased. Sales increased by 84 million kWh and the number of consumers rose by nearly 13,000

Electrical Materials

Production, Consumption and Prices in 1949

This is the customary survey of the course of events during the past year in the markets for some of the principal raw materials used in the electrical industry. It has been specially prepared for us by the Metal Information Bureau, Ltd.

COPPER.—The year 1949 opened with consumption of copper in the United Kingdom running rather below the best post-war figures. Fair stocks were held in the country and the Ministry of Supply made arrangements for the supply of 30,000 tons of imported copper a month for the first half of the year, which was on the same basis as during the whole of 1948. Thus the raw metal supply position was such as to relieve consumers of any real anxiety, at any rate in the immediate future.

In the United States the demand for copper was proving more than the ability of domestic producers to supply, whilst consumers had been deprived of something like 80,000 tons of copper as the result of a three-month strike at the Kennecott Copper Corporation's big Utah property; America, it was obvious, was likely to remain a substantial importer for some time, and with this point in mind many trade factors pressed for the continued suspension of the 4 cents per lb import duty.

As the year progressed, political, industrial and economic uncertainty and the lack of dollars experienced by European countries resulted in an easier demand for copper and copper products, with the result that most fabricators, the United Kingdom and America not excluded, found themselves faced with the possibility of short-time working. The price which British users of raw copper were having to pay the Ministry of Supply continued to run substantially above the world level and a good deal of criticism was heard from fabricators regarding difficulties of competing in overseas markets as a result of this premium.

The reduction in dollar spending announced by the Chancellor of the Exchequer raised doubts with regard to the future supply of copper from Canada, but with good stocks and 1949 requirements already contracted for, consumers in the United Kingdom were well placed. The big Rhodesian producers were already committed with the Ministry of Supply. The year closed with the copper market in America, and consequently in Great Britain since the Government had adopted a policy of aligning values with those prevailing in the U.S.A., displaying a surprisingly firm tone, and a good deal of talk was heard of a possible increase in prices.

Changes in the Ministry of Supply's selling price of electrolytic copper were made on the following dates: 1st October, 1948, £140 a ton; 16th May, 1949, £130; 10th June, £117 10s; 12th July, £104, 13th July, £107 10s; 22nd Sept., £140, 4th Nov., £153.

TIN.—So far as tin was concerned 1949 was a year of steadily improving supplies, and right from the opening months it was apparent that consumers were finding little real difficulty in covering their important requirements.

Requirements of most consumers throughout the world continued to be met by way of allocations made by the Combined Tin Committee sitting in Washington, and as these releases improved appreciably as the year progressed, there was a noticeable falling away in the rush to take up supplies. In view of the new position, continued demands for price reductions were heard from consumers of tin; on the other hand, producing interests were equally loud in their calls, not only with regard to the maintenance of price, but also for assured outlets and the final orderly disposal of the strategic stockpile.

Undoubtedly the high-light of the year was the resumption on 15th November, after eight or nine years, of free dealings in tin on the London Metal Exchange. A Working Party of the International Tin

Study Group has made recommendations that there should be an international commodity agreement on tin, perhaps on the lines of that which prevailed before the war, and this question is to be considered by member Governments of the Group.

ZINC.—Apart from frequent and sharply fluctuating prices it cannot be said that the situation in zinc in this country during 1949 displayed any outstanding characteristics. Whilst important users of zinc such as the brass and galvanising trades were able on the whole to cover their requirements, the overall supply position left room for improvement and generally afforded little opportunity for the accumulation of stocks; indeed, it was not until the last six months of the year that reserves began to display a rising tendency. The bulk of the country's supplies continued to come, as in the past, from Canada and Australia.

Zinc consumption in Great Britain during the first nine months of the year amounted to 260,953 tons (234,108 tons during the same period of 1948), of which 141,878 tons was in the form of virgin zinc (168,159 tons). The official price on 1st December, 1948, was £106 a ton; 4th April, 1949, £101. At the end of November last it was £85 10s.

LEAD.—Rather unsettled conditions characterized the market in lead during 1949. Generally speaking the world remained short of supplies, but with producers' selling prices fluctuating at a high level consumers were placed in an uncertain position and frequently sought refuge by confining purchases to a hand-to-mouth basis. As in the previous year, the United States remained a substantial consumer industrially, whilst the Government's desire to accumulate a strategic stockpile only served to disturb the outlook. In Britain, the Ministry of Supply remained the sole buyer and seller of raw lead and continued to operate a consumer rationing scheme; it is probably true, however, that the more important users of lead in Britain found themselves able to jog along fairly comfortably on such quantities as were made available to them.

United Kingdom monthly consumption remained in the region of about 27,000 tons, of which about one-third was in the form of secondary metal recovered from scrap. During a large part of the year users of lead in Great Britain were called upon to pay a substantially higher price for their supplies from the Ministry of Supply than were prevailing on the international market—frequently as much as £20 a ton more. After the turn of the year, however, the Government decided on a policy of aligning its selling price with the American quotation.

The year closed with the world market displaying a rather unsteady tone, influenced in large measure by substantial offerings of German and Yugoslav lead. United Kingdom imports of lead during the period January-November, 1949, amounted to over 176,000 tons, as compared with 147,000 tons during the first eleven months of 1948.

During the year official selling prices of lead moved as follows: 1st January, £123 a ton; 4th April, £106; 16th May, £95; 10th June, £82; 12th July, £75 10s; 14th July, £81; 26th July, £82 7s 6d; 28th July, £83 15s; 3rd August, £85 2s 6d; 9th August, £87 5s; 22nd September, £122; 30th September, £119; 5th October, £115; 12th October, £111; 19th October, £105; 17th November, £103; 21st November, £101; 23rd November, £97.

ALUMINIUM.—In contrast to the erratic conditions which prevailed in the other main base metals, only three changes were recorded in the price of aluminium in 1949: the year opened with ingot of 99-99½ per cent purity being quoted at £87 a ton; by the end of the year this had risen to £112 a ton as a result of the devaluation of the £ in September. The Ministry of Supply remained the sole buyer and seller of virgin aluminium and supplied users' requirements by imports (mainly from Canada) and by taking up the entire home production.

On the whole, consumers in Britain were pretty well supplied with raw metal although the overall standstill in dollar spending announced during the year by the Chancellor of the Exchequer resulted in uncertainty regarding the renewal on the same basis of the Canadian contract in 1950: the suggestion was made that an increase of £3 a ton made on 15th August, 1949, was the result of an official decision

to take less Canadian aluminium, and thus a greater proportion of total supplies would be made up of the higher-cost home output.

The British price of aluminium ingot following devaluation compared very favourably with the American figure of 17 cents (£136 a ton). As from 5th January, the United Kingdom duty on aluminium has to be abolished, but it is still doubtful whether any foreign producers will be able to offer aluminium as cheaply as the low-cost Canadian producer.

IRON AND STEEL.—So far as the iron and steel industry was concerned, 1949 provided a continuation and, indeed, extension of the very active conditions which characterized the industry during the preceding twelve months. Generally speaking, the production of pig-iron was barely adequate, but to a large degree this was the result of fuel shortages. One of the items which made for difficult conditions was the shortage of semi-finished steel, but there was considerable improvement as the year progressed as the result of negotiations entered into with Continental concerns; indeed, towards the end of 1949 re-rollers in Britain found themselves able to accumulate something in the way of reserves.

RUBBER.—During the early months of 1949 some small price improvements were recorded largely as a result of Russian and American stockpile purchases, although trade recession fears in the United States tended to hold back the industrial demand. In Europe, growing difficulties with regard to currency questions tended to hamper factory demand, whilst the undertone of the international market suffered on continued Dutch offerings of cheap rubber. Generally speaking, however, the statistical position had improved compared with the previous year with production and consumption showing a greater measure of balance: the American stockpile remained in a position to absorb any surplus after industrial needs had been met.

Any real recovery in prices was checked by the gloomy economic outlook as the year progressed, and coupled with this was the growing campaign in the United States for a greater use of synthetic rubber. Following devaluation of the £ in September, prices were advanced by 2½d per lb, and at the end of that month stood at around 13d per lb. The year closed with the market displaying a better tone than for some months, and although buyers were not prepared to enter into large commitments, sellers, on the other hand, steadily refrained from making cheap offers.

Canadian Requirements

THE Machine Tool Trades Association (Victoria House, Southampton Row, London, W.C.1) has published a booklet "Electrically Equipped Machinery for Canada." This is designed for the benefit of exhibitors in this year's International Trade Fair in Toronto. It sets out briefly and clearly the procedure which has to be followed to secure Canadian approval of apparatus and the principal requirements of the Canadian Electrical Code relating to the electrical equipment of machine tools. Some of the points covered are workmanship, main switch and fuses, size and enclosure of conductors, motor protection, spacing between live parts, accessibility and location of electrical equipment.

A list is given of British electrical manufacturers who have already secured approval of certain specified items. There follow some notes on the Canadian supply system and usual practice in the matter of motors and control gear. The concluding section gives particulars of special requirements (additional to those of the Canadian Electrical Code) of certain Canadian automobile manufacturers.

Mr. W. L. Sims, M.I.E.E., M.I.Mech.E., director of Wadkin, Ltd., has been mainly responsible for the booklet. Mr. Sims represented the M.T.T.A. on the United Kingdom Electrical Export Standards Mission which recently visited Canada.

Soft Solders

THE war emergency edition of S.S. 219 for soft solders restricted the number of grades to five. Recent revision has included five antimonial and five non-antimonial solders to cover all common requirements. Slight alterations have been made to the compositions of some of the earlier solders and methods of specifying impurities have been modified. An appendix gives the melting characteristics and typical uses of the solders, while a further appendix gives more information regarding solders intended for service at higher temperatures. Copies of this document may be obtained from the British Standards Institution, Sales Department, 24, Victoria Street, London, S.W.1, price 2s. post free.

VIEWS on the NEWS

By REFLECTOR

A GOOD deal of instructive fun was again provided by Dr. P. Dunsheath in the first of the Royal Institution's lectures "adapted to a juvenile auditory" last week. Dr. Dunsheath showed a model electric house and spoke of the many uses of electricity in the home. He also dealt with the wider ranges of electrical applications—industry, lighting, medicine, gunnery control, etc. The lecturer did some high-frequency cooking and provided some of his audience with mince pies done in this way. A warning of the troubles arising from faulty wiring was provided by the blowing of a fuse with a loud report.

★ ★ ★

Correspondence on the subject of Welsh water power continues in the lay Press. One advocate of the scheme for the development of this power writing to the *Daily Telegraph* says it should not be forgotten that the saving of 300,000 tons of coal by the scheme represents the output of nearly 1,000 miners working at the coal face. "Surely," he says, "one would prefer to see these men spending their working time in the fresh air of Snowdonia even with pylons and the other adjuncts of a hydro-electric scheme." He does not explain what these miners would do in their working time if it were spent in the open air.

★ ★ ★

Since writing a few weeks ago about electrically operated factory doors I have had an opportunity of visiting the new works of the Boots Pure Drug Co., Ltd., at Airdrie. Here not only are many of the doors worked electrically but, as I suggested was the next logical step forward, some of them have been arranged to operate automatically by means of photo-electric cells. Some little difficulty was at first experienced by the doors opening and closing in response to the sun's coming out and going in, but this trouble was soon overcome. A further complication, that of the operation of the doors by persons in the vicinity who did not wish to pass through them, was obviated by mounting the photo-electric cells at such a height that they could be operated only by raising the hand above the head.

★ ★ ★

Although the public may not be expected to grasp the nature of the nationalized electricity "set-up," I should have thought that a journal of the standing of *Time and Tide* would be better informed. In a recent issue, commenting on the power station strike, reference is made to the negotiations between the unions and the "Central Electricity Commission." Perhaps, though, this is not a bad description of the body which took over the work of the C.E.B. and the Commissioners.

★ ★ ★

Electricity as a lightener of housework is often mentioned as a factor tending towards encouraging an increased birth rate, but it looks as though it may be blamed for producing the opposite effect in Sweden. It is stated that at one time hundreds of farmhouses in the southern part of the country had their stork families which returned there every spring. For the past ten years, however, the storks have failed to return and one of the reasons given is electrification, the power and telephone lines being said to be dangerous to the stork and her young. Perhaps the intensive cultivation of gooseberry bushes might do something towards rectifying the situation.

★ ★ ★

So far as I know, the London Electricity Board is the only one of the fourteen to produce a 1950 diary. It gives a great deal of information about the Board's organization and activities as well as other relevant matter. Presumably the diary is principally designed for the use of the Board's officials; I do not imagine that the 1½ million London Area consumers are to receive it.

CORRESPONDENCE

Letters should bear the writers' names and addresses, not necessarily for publication. Responsibility cannot be accepted for the opinions expressed by correspondents

Ring Mains

THE subject of the ring main has recently been receiving considerable attention at the Electrical Societies of Glasgow, Falkirk and Kilmarnock. Without differences of opinion on such a matter, no progress can be made. It would appear that a number of people who are engaged on installation work are not quite clear about what a ring main actually is and possibly even the writer requires a little education on the subject.

The ring main, as we know it, is essentially a ring of cable, or cables, having both open ends connected to a switch-fuse, or circuit breaker, the object being to enable tappings to be made at any point on the ring with local protection at each outlet socket by a fused plug. This system has been successfully used in ships for many years and one would naturally assume that it could be used equally successfully in houses, public buildings, etc.

The ring main enthusiasts (of which I am bound to admit there are many) claim that the system would cheapen the cost of installation work and end the problem of insufficient outlets in domestic circles. It has been suggested that the trough, or bus-bar, system for commercial purposes lends itself to the ring main principle, but the bus-bar system has already all the advantages of the "ring," although not actually connected as such.

As I have consistently been in the "opposition" in these discussions or, in other words, have been deliberately provocative, perhaps I should again express my views, which may or may not be correct, with the object of obtaining the opinions of your readers.

In the first place all circumstances have to be taken into account before any particular system of wiring can be decided on. If we could depend on only qualified contractors, the ring main would have many advantages. If all the advantages of the ring main were to be enjoyed, it would be necessary to use some sort of flexible system such as lead-covered cable, t.r.s., etc., so that additional tappings could be made as and when required. That, in itself, would be a disadvantage as no house-proud lady would tolerate unsightly cables all over the place.

At present, bonding and earthing do not receive sufficient attention and if a ring main were installed we should find the handyman and quack electrician cutting a piece out of the sheathing, baring the conductors and sticking on a couple of wires to obtain an extra point. Again, at present, where fused plugs and sockets are in use, spare cartridges are seldom available and the householder or handyman simply sticks in a piece of wire of any size, often with disastrous results. With the ring main system I shudder to think of what might happen.

If the new 13 A fused outlet became standard all might be well with the ring system, but even with these accessories I am not convinced that ring mains are desirable for houses. One of the claims of its advocates is that the ring main is very accessible and that is just one of my objections to its use because it is too accessible to be safe. Readers of the *Electrical Review* will be aware of those cheap and nasty gadgets sold in chain stores, ironmongers, etc., and the ring main would certainly encourage the use of such things.

Taking all circumstances into account it is questionable if the ring main would cheapen the cost of installation, particularly with all the snags that would arise. If the system were used in business premises where two tariffs were in operation it would be necessary to install two "rings" for the purpose and, apart from cost, such an arrangement would only lead to confusion.

I am old-fashioned enough to believe that we cannot beat the orthodox methods of wiring with 15 A per circuit, properly protected by a distribution fuseboard. When several 5 A outlets are required they can quite conveniently and safely be connected to one circuit in strict conformity with the rules.

Glasgow. A. MILNE, Senr.

Factory Legislation

Chief Inspector's Report for 1948

OUTSTANDING events mentioned in the annual report for 1948 of the Chief Inspector of Factories (Mr. G. P. Barnett) were the passing of the Factories Act, 1948, which substantially extended requirements relating to the fitness of young persons employed in factories; and the coming into force of the Building (Safety, Health and Welfare) Regulations, 1948, of one hundred clauses of much wider scope than the 1926 and 1931 codes.

The statistical sections of the report show that there were 201,086 notifiable accidents (861 fatal) compared with 203,236 (839 fatal) in 1947. Accidents due to shafting, belts, ropes and pulleys were in total less numerous than in the two previous years, but there is still much ignorance about the dangers of transmission machinery in motion.

Almost all work undertaken by a building contractor, or decorator, is now subject to at least some of the 1948 regulations. Highly inflammable materials and solvents are being increasingly used in special "building" work, so particular care is needed to remove any possible source of ignition (including electrical) and it must be remembered that the electricity regulations made under the Factories Act apply to building operations.

Electricity caused 65 accidents in shipbuilding yards and eight in wet docks. Only one case of lead poisoning in electric accumulator works was reported, the lowest figure so far recorded.

From the inspector's point of view, radiological hazards in industry are growing with the increase in power and scope of the apparatus employed; so also is the use of radio-active materials for the examination of castings and all sorts of fabricated articles.

Factory lighting improvement has proceeded slowly, but steadily. Some schemes employing rows of fluorescent tubes mounted at high level for even illumination, termed shadowless, have not been up to expectation. Workrooms seem dreary and featureless until local lighting (not to kill shadow or obtain higher intensity) was added to provide "focus" to draw the eye to the job.

It is rare to find a new factory in which the lighting installation is not of a reasonably good standard, the main factor being the ample supply of fluorescent tubes, which have maintained their popularity, though the cold-cathode tube is tending to be preferred as it seems to have a longer life and to be less affected by machinery vibration and voltage fluctuation.

There has been some reversion to tungsten lamps in larger factories, but ease of installation is still the overriding argument in favour of fluorescent tubes in small workrooms. There has been some use of the shorter tubes, 20 and 40 W, for local lighting of fine work.

Briefly, the popularity of fluorescent light has ebbed and flowed, but there has been no sign of real change; mixing has not always been satisfactory. Some of the most striking results have been achieved in the Scottish border textile mills and the report suggests scope else-

TABLE I—ACCIDENT FREQUENCY RATES.

Industry	No. employed		No. of factories		Frequency rates*	
	1947	1948	1947	1948	1947	1948
Engineering, light electrical and radio ...	27,400	52,400	24	45	1.07	0.96
Engineering, general and heavy electrical ...	54,300	71,300	33	48	1.72	1.65
Electricity generation	3,100	2,800	5	6	3.11	2.19
Totals, all industries	820,500	1,283,600	779	1,192	2.27	2.24

* Frequency of accidents (causing loss of time in excess of day or shift) per 100,000 man-hours worked.

where for similar propaganda to that of the Lighting Service Bureau of Scotland.

Factories numbered 243,769, of which 4,884 employed more than 250 workers, 10,475 employed fewer than 100 and 202,868 fewer than 26 people. The number of inspectors, including electrical, was 328 at the end of the year, 50 fewer than the authorized staff.

The report (H.M. Stationery Office, price 2s) refers to the increase of electrical accidents in 1948, which are dealt with in greater detail in a separate report.

East Midlands Council

THE sixth meeting of the East Midlands Electricity Consultative Council was held at Nottingham last week. A letter from the Minister of Fuel and Power intimated the appointment of Mr. J. W. Rayment (Lincoln) as deputy chairman of the Council and the Earl of Gainsborough as a member.

Proposed Block Tariff

It was reported that the East Midlands Board was at present considering a proposed new domestic tariff structure to replace the different tariff rates in operation in the Area, some utilizing rateable value and some floor area as the basis for the fixed charge. The proposals submitted by the Board were for a new domestic tariff comprising an initial block of "units" assessed on the number of rooms, with a low running charge for all additional consumption.

No decision had yet been reached regarding the size of the initial block, or the "unit" price. The General Purposes Committee of the Council expressed the view that the introduction of a simple two-step block tariff of this kind would be desirable.

Dangerous Installations

Concern was expressed by a number of members regarding installations carried out by unqualified or "amateur" persons. A resolution was passed asking the Area Board to consider the advisability of drawing consumers' attention, by suitable publicity, to the danger of such installations as well as of the incorrect connection of appliances to existing wiring, and the sale and use of unsafe appliances.

The chairman of the East Midlands Board (Mr. C. R. King) said they did not want more regulations, or more restrictions, and certainly not more snoopers, but he thought some means could be found to ensure the safety of the consumer. In answer to a question by the Earl of Gainsborough, he said that in the past year among 10 million consumers in the country there had been 68 fatal accidents through electrical installations.

Effect of Expenditure Cuts

Mr. King told the meeting that the Board would probably have to face a reduction of 30 per cent in expenditure under the Government capital cuts and it would be impossible to carry out most of the plan to reinforce the mains. "It meant that people who were grumbling about low voltage in rural areas would have to go on grumbling a little longer, but it was better to give someone a supply at a lower voltage than no supply at all.

The change-over from d.c. to a.c. would go on in a modified form. The Board's rural policy would be interfered with as little as possible by these cuts."

A resolution was passed by the Council requesting the Board to spread any capital retrenchments over a wide field so that as little of the burden as possible was placed on rural development.

National Register

THE future of the National Register of Electrical Installation Contractors is dealt with in the January issue of *Registration*, the N.R.E.I.C. official review. It is said that upon the nationalization of the electricity supply industry negotiations were immediately commenced with the new authorities and these, though protracted, have resulted in certain important decisions, the most noteworthy being the recognition by the Electricity Boards that the aims and objects of the National Register should be maintained and encouraged.

As inspection is the predominant work it is suggested that the title should be altered to "National Inspection Council for Electrical Installation Contractors."

It is proposed that the designation "Approved Contractor" shall be used to indicate that a contractor has been approved by the National Council as being a qualified and competent electrical installation contractor.

In each Area Board showroom will be displayed a list of approved contractors operating in the locality and this list will be published by other appropriate means. The inspectorate staff will be reinforced to ensure more frequent reinspection of approved contractors' work.

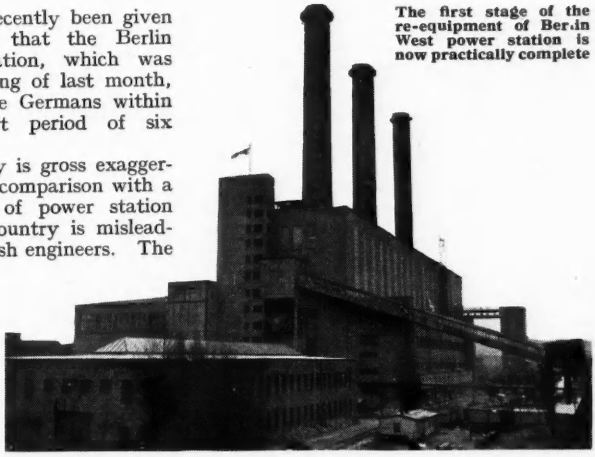
The complete independence maintained by the N.R.E.I.C. will be continued in its new guise as the National Inspection Council.

Berlin West Power Station

LARGE QUANTITIES OF EQUIPMENT FOR RECONSTRUCTION TRANSPORTED BY AIR

PUBLICITY has recently been given to a suggestion that the Berlin West power station, which was opened at the beginning of last month, had been built by the Germans within the remarkably short period of six months.

This claim obviously is gross exaggeration and the implied comparison with a less spectacular rate of power station construction in this country is misleading and unjust to British engineers. The job which the Germans accomplished was a notable achievement, but related only to the installation of new plant in existing buildings and not to the construction of a complete new generating station involving site preparation, civil engineering construction and other ancillary work.



The first stage of the re-equipment of Berlin West power station is now practically complete

The original station began working nineteen years ago when the first half of the station was commissioned, the remainder of the plant being put on load eighteen months later. The installation comprised eight 330 k.lb/hr 470 lb/sq in 880 deg F stoker-fired boilers; and six 34 MW 10.5 kV turbo-generator sets, each with a unit transformer stepping up to 30 kV, and two 12 MW 6.3 kV house sets.

In May, 1942, the construction started of a high-pressure extension to the station consisting of four 350 k.lb/hr 2,000 lb/sq in 932 deg F pulverized fuel Benson boilers, and two 26 MW topping sets exhausting to the existing 470 lb/sq in steam range after reheating in the Benson boilers to 880 deg F.

The foundations and greater part of the steelwork in the new boiler house, designed to accommodate the two topping sets as well as the four boilers, had been constructed in May, 1945, when the city was occupied by the Russians, who, before the arrival of their Western allies, had dismantled and carried away the whole of the existing plant apart from the main boiler structures, which have since been sold for scrap.

The first stage of the reconstruction of the station was ordered in April, 1948, and involved the installation of two 350 k.lb/hr 2,000 lb/sq in 932 deg F Benson boilers; one 26 MW topping set; two 36 MW two-cylinder 324 lb/sq in 807 deg F condensing sets; and one 12 MW 324 lb/sq in 807 deg F house set.

The two boilers and the topping set were installed in the new boiler house, which was partly built during the war, and the low-pressure sets were installed in the old turbine house which had been stripped by the Russians.

Apart from the second 36 MW condensing set, which is being commissioned this month, the above plant was completed and in operation by the end of November. Owing to various financial difficulties and delays caused by the blockade of Berlin, the assembly of the

boiler plant was not started until 9th May, 1949, but a trial run of the first unit took place at the end of October, only five and a half months later. This rapid construction was no doubt aided by the high priority given to the work and the employment of picked erectors. The number of men who were employed at one time on the construction of the power station reached a maximum of just over 2,000.

During the blockade, 1,460 tons of equipment for the station was transported by air, many of the boiler tubes having to be cut in order to accommodate them in aircraft. Siemens-Schuckert acted as consulting engineers and main contractors, the turbine plant being manufactured in their works at Muhlheim in the Ruhr.

The Benson boilers were manufactured jointly by Durrwerke A.G. at Ratingen-Ost and by Vereinigte Kesselwerke A.G. at Dusseldorf. Welded construction is used throughout. The boiler control is fully automatic, the whole of the control of the station being operated from the combined electrical/heat control room.

The plant has been designed for peak operation and rapidly fluctuating loads. Two 2,260 cu ft Ruths steam accumulators capable of operating to a maximum pressure of 470 lb/sq in are connected to the low-pressure range for steam regulating purposes. The station is river-cooled by the Spree, on the banks of which it is situated. The anticipated coal consumption is 1 lb per kWh generated.

The achievement of the German engineers should not be minimized. They have worked very hard and fast to install a large boiler plant in five and a half months, even after making allowance for the fact that the plant is of a design relatively simple to erect and was given exceptional priority. At the same time it should be emphasized that although the building of a power station in Britain is said to take four to five years, this period concerns an entirely new station and sometimes more than two years is taken to obtain the necessary consents before it is possible to make a start on the physical work. In all, the actual construction of the edifice takes two to three years.

SCHOOLBOYS' EXHIBITION

THERE can be no denying the interest shown in electricity at the Schoolboys' Own Exhibition which, until 14th January, is being held at the Horticultural Hall, Westminster. One of the most popular centres of attraction is the stand of the British Electrical Development Association, where, in addition to a model of a thermal power station, is another showing how the tides on the North-West coast of Scotland could be harnessed to provide electricity.

Among a series of what are apparently pin tables demonstrating the various features of domestic electrical installations is a device incorporating a hand-driven generator to show the strain imposed on a power station in these days of power shortage. Turning on switches marked "Electric Fire," "Cooker" and "Water Heater" puts more load on the generator, making it increasingly difficult to turn the handle; in the end it is impossible to turn the handle any more and all the lights go out in a model factory. Other E.D.A. exhibits indicate improvements in design of electrical appliances and show methods of street lighting control.

Another electrical exhibit which is creating a great deal of interest is to be found on the Tate & Lyle stand, where an experimental electromagnetic device designed by the British Thomson-Houston Co., Ltd., is demonstrated conveying empty syrup tins during manufacture. Tins are rolled along a magnetized track by a progressive series of waves of electromagnetic force. Each tin is at the crest of a wave and separated magnetically from the next tin at the crest of the following wave. Incorporated in the magnetic track is an electric winding fed with d.c., and part of this winding is connected to a commutating device which is the means of producing the travelling waves of magnetic force.

No exhibition of this kind would be complete without an electric railway, and a British Railways model includes 500ft of track complete with examples of express trains running in each region in their new liveries. Actual flame-proof coal cutting and loading equipment accompanies a model demonstrating cleaning and grading of coal on the National Coal Board stand, while a grass dryer and a brooder are typical applications of electricity in an agricultural exhibit.

Commerce and Industry

Equipment for Canada
British Tenders in America

AS we reported in our issue of 16th December, arrangements are being made for the preliminary work in connection with the testing and inspection of electrical equipment destined for Canada to be done in this country under the ægis of the B.S.I. instead of in the C.S.A. Laboratory in Canada. All applications from manufacturers for C.S.A. approval should be addressed to the Director of the British Standards Institution, 24-28, Victoria Street, London, S.W.1.

It is an essential preliminary that manufacturers should familiarize themselves with the C.S.A. specifications relating to their products, and should satisfy themselves that their goods conform to these standards. To assist manufacturers in this matter a representative of the Canadian Standards Association will be available for consultation, by appointment, at the B.S.I. office. Copies of the C.S.A. specifications, which form part of the Canadian Electrical Code, may be consulted in the B.S.I. library and copies are also available on sale.

It may not be possible for the B.S.I. to arrange, at any early date, for tests and inspection of all electrical products submitted for approval. A considerable number of outstanding applications to be dealt with have been passed on to the B.S.I. by the C.S.A. In addition, approval of electrical equipment for capital industrial plant is a matter of urgency because of the large-scale participation by certain sections of British industry in the International Trade Fair to be held in Toronto this year.

Houses into Flats

The important part played by electricity in the conversion of houses into flats is outlined in an attractively illustrated brochure issued by the British Electrical Development Association entitled "Electricity Turns Old Houses Into New Flats." There are many large houses in various parts of the country which are unoccupied and deteriorating or otherwise an embarrassment to their owners, so that if these can be converted into flats a contribution to the solution to the housing problem is made. For this class of work electricity possesses a number of special advantages, the most important of these being that all the services required in a modern home can be provided efficiently and economically by one installation from one electric cable brought into the house. The booklet is divided into a number of sections each of which deals with one of the main services to which consideration should be given in planning conversion. Architects, builders and others interested in this subject of house conversion can obtain the booklet on application to their local Electricity Service Centre, or to the E.D.A., 2, Savoy Hill, London, W.C.2.

Rolling Mill Drive

The accompanying picture shows the bottom half casing of a B.T.H. 4,500/10,800 h.p. d.c. motor on its way to the Steel Co. of Wales. For this customer the British Thomson-Houston Co., Ltd., has

Part of a large B.T.H. d.c. motor for steel rolling mills en route to Welsh steel works

in hand electrical equipment which includes two motors of this rating (4,500/10,800 h.p., 125/282 r.p.m.) and one rated at 4,000/9,600 h.p., 132/296 r.p.m., these being for the drive of the 80-in hot strip finishing mill. The manufacture of three further motors for the same mill, each rated at 5,000/12,000 h.p., is well advanced, while the 21,000 kW rectifier equipment, comprising thirty pumpless steel tank rectifiers, has already been dispatched.

British Tenders for American Contract

Reports from the United States last week stated that the English Electric Co., Ltd., and Ferranti, Ltd., had put in tenders for transformers for the Seattle (Washington) City Light Co. which were below the American quotations. According to the New York correspondent of the *Daily Telegraph*, acceptance of the tenders depends largely on the interpretation of a clause in the City's charter providing that in awarding contracts preference should be given to local firms. Although American firms tendered, none of them was actually "local." It is further said that there are some variations in the specifications and the British offers include price-adjustment clauses which may influence the decision.

New Chloride Company

The directors of the Chloride Electrical Storage Co., Ltd., have decided that their manufacturing and selling activities principally carried out under the trade names, Chloride, Exide, Exide-Ironclad and Drydex shall as from the 30th December last be transferred to a new company—Chloride Batteries, Ltd. This company, with a capital of £1,500,000, will be a full subsidiary of the Chloride Electrical Storage Co., Ltd., and will be carried on under the same direction. This re-organization is planned to improve the efficiency and general co-ordination of management of the activities of the Chloride Electrical Storage Co., both at home and abroad.

E.C.A. Year Book

The Electrical Contractors' Association (with its allied organizations—N.E.C.T.A., Ltd., and the National Federated Electrical Association) has produced a new edition of the "Electrical Contractors' Year Book" (1949-50). This represents a return to (or even an improvement on) the pre-war standard; many features have been restored, others have been added and the volume is cloth-bound. A welcome return is that of the alphabetical list of E.C.A. members which was omitted for a time, leaving only the "geographical" list. Innovations include a 14-page section on the B.E.A. and Electricity Boards (including the North of Scotland Board) with the names and addresses of the principal officers of concern to electrical contractors. All the agreements on wages and conditions in the electrical contracting industry are included as well as much other useful matter. Copies are obtainable from the Association, Africa House, Kingsway, London, W.C.2, at 11s, including postage.

Canadian Television Orders

The Montreal correspondent of the *Financial Times* reports that the C.B.C. intimates that transmitters for Canada's first television stations in Montreal and Toronto will be built by Canadian companies. In Montreal, where the C.B.C. plans both English and French television stations, transmitters will be built by the Canadian R.C.A. at a cost of $204,000, while the Toronto transmitter will be built by the Canadian General Electric Company at a cost of $184,000. A regular television service in Canada is not expected to commence before the autumn of 1951.

Hungarian Standard Electric Co.

The Minister of State for Hungary has announced that his Government has confiscated a number of foreign-owned companies, one of which is the Standard Electric Co., Budapest, which is a subsidiary of the International Telephone and Telegraph Corporation of the U.S.A. The I.T.T. have issued a statement to the effect that the conduct of themselves and their subsidiaries has always been in strict conformity with the laws of the U.S.A. and of the countries in which their subsidiaries operate. Any statement or accusation that the I.T.T. organization was used for illegal purposes is without any foundation whatsoever.

New Meter Standards

The addition of the words "in London" to the caption of the graph in the article under the above heading last week may be misleading. It should therefore be explained that curves (c) and (d) refer to a survey covering about one-third of the total domestic consumers in this country and should thus be fairly representative of all consumers in 1946.

About the B.E.A.M.A.

The British Electrical and Allied Manufacturers' Association has reproduced in booklet form the introductory matter to the recently published "B.E.A.M.A. Catalogue." This covers briefly, but adequately for the purpose, the history and activities

of the Association. Included in the matter is a list of the thirty sections into which the membership is divided; other electrical associations outside the immediate scope of B.E.A.M.A.; and the Association's activities in connection with contract conditions, standardization, research, production, materials, education and training, transport, etc. A short section gives an account of B.E.A.M.A.'s encouragement of export trade.

Power Distribution

In the November issue of the French journal *Revue de l'Aluminium* there is a description of a prefabricated rising main designed by M. Charles Roussel, which offers a high current carrying capacity for power distribution. It is made of elements having a length equal to the height of one storey of a building and each comprises a cluster of bare aluminium conductors embedded in concrete and connected to branch circuits bearing the cut-outs. This feeder arrangement is low in cost, takes up little space and can withstand momentary surges of current.

Floor Heating Installation

In the latest issue of "The Kelvin" (the South West Scotland Electricity Board magazine) Mr. G. Provan, district commercial assistant, Paisley, describes a floor heating installation at the Paisley district office.

The cable used is "Rockbestos" covered and lead sheathed and, although it can be installed direct, in this case it is in conduit for easy replacement. Normally the cables (in 80ft, 690 W lengths) are spaced 9in apart; near walls and doorways the spacing is reduced to 4½in. Over the conduit are two layers of wire netting and the whole is covered by about 2in of screeding.

Altogether the loading is 120 kW; it is estimated that 210 kW of tubular heating would have been necessary. The floor surface temperature is maintained at about 70 deg F and control can be by either wall or floor thermostats.

E.I.B.A. Northern Counties Area

The annual general meeting of the Northern Counties Area of the Electrical Industries Benevolent Association will be held on 19th January, at 3.0 p.m., in the Lecture Theatre, Lower Ground Floor, Carliol House (Pilgrim Street entrance), Newcastle-upon-Tyne, under the chairmanship of Col. G. G. Mallinson.

Advertising Advisory Council

The Advertising Advisory Council, set up at the request of the Dollar Exports Board, has now completed its preliminary surveys, and has worked out a system by which its services will be made available to all British exporters to the United States. The Council is composed of representatives of British advertising agencies having operating branches in the United States, and of American advertising agencies having branches in this country. The objects of the Council are threefold: first, generally to encourage British exporters to the United States; second, to advise the Dollar Exports Board on advertising and marketing in connection with these exports; and third, to advise intending exporters on advertising and marketing in the United States.

The Advertising Advisory Council has established temporary offices at 40, Berkeley Square, London, W.1; all inquiries by intending exporters should be addressed to the acting secretary, Mr. D. W. James, at this address.

Radio Materials Specification

A recent publication of the Radio Industry Council forms a guide to manufacturers in choosing materials for radio and electronic equipment and for components used in that equipment. This specification, RIC/1000/A, is intended to assist industry in settling its materials problems along lines comparable with those on which the Inter-Service Specification RCS/1000 helps the Services to deal with theirs.

The subjects covered include ferrous and non-ferrous metals, plastics, insulating materials, textiles and paper, timber, lubricants, wire and sleeving, solder and fluxes.

Copies of the specification are obtainable from the Radio Industry Council, 59, Russell Square, London, W.C.1, price 3s 6d post free.

Raw Materials Directorates

The Board of Trade announces that the work of the Mica, Rubber and Sundry Materials Directorates has been amalgamated from 2nd January. The remaining functions of the present separate Directorates will be carried out from that date under the title of the Directorate of Sundry Materials. The address will continue to be Empire House, St. Martin's-le-Grand, London, E.C.1 (telephone: Monarch 1020).

A.S.E.E. Conference

The next annual conference of the Association of Supervising Electrical Engineers is to be held in London on 20th and 21st May. Motions for the agenda should reach the secretary by 18th February.

Extruded Sections

A 45-page publication which has just been issued by the Aluminium Development

Association forms an excellent introduction to the subject of aluminium alloy extruded sections. It opens with a survey of the characteristics of aluminium and its alloys, including tables of the properties of those materials in which extruded sections are produced. The extrusion process is then described in principle and this clarifies the subsequent account of the design factors which are of importance if optimum production efficiency is to be ensured. This bulletin (No. 16) is available from the Association at 33, Grosvenor Street, London, W.1, price 1s.

Transformers for New Zealand

The Brush Electrical Engineering Co., Ltd., through its agents, Clyde Engineering, Ltd., Wellington, New Zealand, has secured an order for two 20,000 kVA banks of 66/11 kV transformers with on-load tap-change gear for the Papanui substation of the State Hydro-Electric Department.

Trade Announcements

The Arora Co. has appointed D. Whipp, Ltd., 1a, Lenton Avenue, The Park, Nottingham, as its agents in the counties of Leicester, Derby, Nottingham, Lincoln and Rutland, and Mr. P. F. Preece, 2, All Saints Terrace, Bridgwater, Somerset, as its agent for South West England and South Wales.

The Birmingham lamp stores of the **British Thomson-Houston Co., Ltd.,** are now at Bolton Street, Bordesley, Birmingham, 9 (telephone: Victoria 1162). The trade counter will continue to form part of the main office premises at Geoffrey Buildings, John Bright Street, Birmingham (telephone: Midland 6335).

Dexray Engineering Co., Ltd., announces that Mr. J. K. Everett has been appointed its representative for Lancashire and Yorkshire.

The **Metropolitan-Vickers** office hitherto at Carlisle, including the Lamp and Lighting Department, is being transferred to Victoria Buildings, 38, South William Street, Workington (telephone: Workington 795), opening at the new address on 9th January. The office will still be in charge of Mr. J. Rogers.

Zinc Price Increase

The Ministry of Supply announces that as from 30th December last the price of good ordinary brand zinc has been increased from £85 10s to £87 10s. Prices of other grades are increased accordingly. The zinc oxide manufacturers also announce that from the same date the prices of zinc oxide, in lots of not less than two tons, delivered at buyers' premises, will be increased by £1 15s. The new prices are as follows: Red seal, £84; green seal, £85 10s; white seal, £86 10s.

Catalogues and Lists

Welwyn Electrical Laboratories, Ltd., Bedlington Station, Northumberland.—Catalogue of resistors and air dielectric trimmer capacitors.

Hanovia, Ltd., 3, Victoria Street, London, S.W.1.—Brochure with coloured illustrations describing domestic ultra-violet-ray lamps.

Isopad, Ltd., 13-17, Rosemont Road, London, N.W.3.—Priced folder on heating mantles for industrial and laboratory use.

The Gramophone Co., Ltd., Hayes, Middlesex.—Illustrated folder and price list of domestic appliances.

Muirhead & Co., Ltd., Beckenham, Kent.—Three technical leaflets on a Duddell oscillograph, type D-365-A; an inductance bridge type, A-181-A; and the D-101-A frequency bridge.

Load Flow Calculations

An obvious error occurred in Mr. J. B. McPherson's article on load-flow calculations in our 23rd December issue. In Fig. 1 (b) there should have been a plus sign and not a multiplication sign in the lower line of each equation.

Pipework Production

New Departure by C. A. Parsons & Co.

IT has already been stated in the *Electrical Review* that the existing national productive capacity for high-pressure pipework is unable to meet the British Electricity Authority's requirements at present and is estimated to fall short of requirements for the next few years. Thus there is danger of delay in bringing into service the extensions and new generating stations now on order or planned. Consequently the B.E.A. has asked C. A. Parsons & Co., Ltd., Heaton Works, Newcastle-upon-Tyne, to extend their normal range of products to include the fabrication of high-pressure pipework.

The company will undertake the supply, fabrication and erection of all pipework and other equipment required to connect steam boilers to turbo-alternators, including steam and water lines. It will carry out this work for a limited period of five to six years for the specific purpose of overcoming the present shortage. The placing of this work on Tyneside will assist in relieving the pocket of unemployment now forming there. Construction of new works has begun and production is scheduled to begin in November next, reaching full output by March, 1951.

The Year's Progress

Further Details of Manufacturers' Work in 1949

LAST year began with the successful running at the Rugby works of the English Electric Co., Ltd., of the steam turbine for Stourport to operate at 1,250 lb/sq in and 950 deg F; the associated hydrogen-cooled 60,000 kW 3,000 r.p.m. alternator was built at the company's Stafford works and erection on the site is now in an advanced stage. The contract includes a twin-shell surface condenser with a five-stage feed water heating system. The despatch of this machine was closely followed by that of the 45,000 kW (m.c.r.) set for Ferrybridge; also nearing completion are the two 30,000 kW (m.c.r.) sets for London (West Ham), while the first and second 30,000 kW (m.c.r.) sets for Pretoria "B" were shipped early in the year to South Africa.

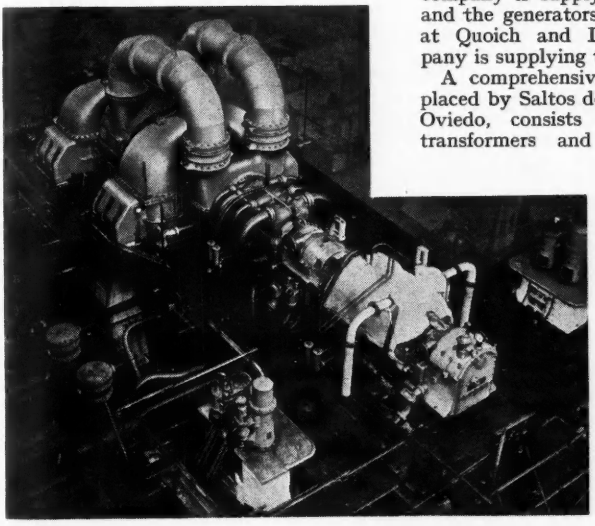
The first 60,000 kW (m.c.r./m.e.r.) machine made in accordance with S.R. & O. 1947 No. 2386 by this company for Fulham is now in course of erection; it is designed for 3,000 r.p.m. at 900 lb/sq in and 900 deg. F. Designs are well advanced for a 60,000 kW 3,000 r.p.m. hydrogen-cooled set for 1,500 lb/sq in and 1,050 deg F for the B.E.A.

An export order covers five 30,000 kW (m.c.r./m.e.r.) sets for 600 lb/sq in and 825 deg F for the Electricity Supply Commission, South Africa, for the Vierfontein station in the Orange Free State, including condensing and evaporating plant with four-stage feed water heating system and all accessories.

An order by the Anglo-Iranian Oil Co. for a 31,500 kW set for Abadan is a repetition of the two already being built, while two 1,150 kW (m.c.r.) turbo-alternator sets were ordered by the Sheffield and Rotherham Division of the East Midlands Gas Board.

In the early part of the year the North of Scotland Hydro-Electric Board placed a contract for generating plant for the Garry-Moriston scheme in Inverness-shire. For the three stations at Invergarry, Invermoriston and Ceannacroc the company is supplying both the turbines and the generators; for the two stations at Quoich and Dundreggan the company is supplying the generators.

A comprehensive contract for Spain, placed by Saltos de Navia en Comunidad Oviedo, consists of generating plant, transformers and switchgear for the Salime station on the River Navia about 56 miles from Oviedo. The vertical reaction water turbines with "straightflow" inlet valves of the company's patented type will operate under a head of 69



Three-cylinder 60,000 kW 3,000 r.p.m. English Electric turbine for Stourport on test run in the Rugby works

metres at 300 r.p.m. The four generators are each designed for 32,000 kVA at 11 kV, 50 c/s; at the switching station there will be four step-up transformers, each of 32,000 kVA, with 132 kV air-blast circuit-breakers.

The other contract with the S.A. Hidroelectrica Espanola is for generating plant and switchgear for the Picazo station on the River Jucar about 200 miles east of Madrid. There, two 12,850 h.p. vertical reaction water turbines at 47.65 metres net head will drive vertical generators of 9,450 kW at 12.3 kV, 50 c/s, 300 r.p.m. The switchgear will be of 150 kV and 12.3 kV air-blast type together with supervisory control equipment. The station will be unattended and completely automatic, controlled from the Olmedilla switching station about 12 miles distant.

Three 22,000 h.p. horizontal impulse turbines of 1,474 ft head at 500 r.p.m. for the Ceylon Government will extend the Aberdeen-Laxapana scheme for which the company recently supplied three 14,500 h.p. at 600 r.p.m. turbines. John Inglis & Co., of Toronto, received an order from the Ontario Hydro-Electric Power Commission for two 33,000 h.p. vertical reaction turbines for 77 ft head at 94.7 r.p.m., to be manufactured by John Inglis to English Electric designs.

Also proceeding are two Portuguese contracts, Hidro-Electrica do Zezere for Castelo do Bode and Hidro-Electrica do Cavado for Vila Nova, which are being executed jointly by the English Electric Export & Trading Co. and the Metropolitan-Vickers Electrical Export Co. The former is for three 73,000 h.p. vertical reaction units for 174-312 ft head at 214 r.p.m., with inlet valves, main transformers and 150 kV switchgear; subcontracts include the intake equipment at the dam, cranes, etc. The other contract is for three 39,000 h.p. horizontal impulse units for 1,360 ft head at 428 r.p.m. with inlet valves, step-up transformers, 150 kV switchgear, pipelines, cranes, gates, discharge valves, etc.

Orders for diesel engines came from the B.E.A., Coventry Corporation for Finham sewage works, a London departmental store, British Railways, Netherlands State Railways, Sudan Government Railways, Tasmanian Government Railways, South Australian Railways, Department of Civil Aviation in Australia, Brazil and East Africa.

Several gas turbine projects for various fuels have included full-scale tests on what, so far as is known, is the largest gas turbine heat exchanger yet built in this country. The company has also built and had satisfactory preliminary runs of what is believed to be the largest axial flow gas turbine compressor produced in Great Britain to date.

One of the two transformers ordered for West Melton and Staythorpe is being built by the English Electric Co. for an experimental section of a 275 kV transmission system to reinforce the 132 kV grid. Export orders included 132 kV 10 MVA transformers for South Australia, repeat orders from the New South Wales Government Railways for 120 kV, 132 kV and 138 kV transformers of from 30 to 55 MVA, a number of 20 and 15 MVA at 33 and 88 kV for South Africa and a repeat order for a 40 MVA 34.5 kV transformer for Finland.

Oil circuit-breakers continued to be in steady demand. Among the largest single orders

Double drum hoist at South African mine driven by two a.c. motors totalling 3,260 h.p. through common spur wheel and shaft

was one for ten complete outdoor substations with oil breakers of 33 kV, 66 kV and 132 kV for the Nangal scheme in East Punjab. Orders for air-blast breakers included 132 kV gear for Australia, 132 kV and 11 kV breakers for Spain and 1,000 MVA breakers for blockhouse mounting for the South Wales Electricity Board. Large orders for air-break switchgear were received from South Africa, Australia and other countries for station auxiliaries and industrial purposes beside home orders.

Rectifier Orders

A considerable volume of rectifier business was obtained and a large majority was for export to the Netherlands Railways and the Polish State Railways for the Danzig-Gdynia line (later at 1,600 V) while 12,000 kW of 3,000 V equipment for the Estrada de Ferro Santos a Jundiai, Brazil, was delivered.

Orders came from Denmark, Finland, Holland and the British Broadcasting Corporation (Daventry) for high-voltage rectifiers for radio transmitters. The same d.c. type rated at 300 kW at 12,000 V has been installed at Birmingham University for a cyclotron, following successful operation of an equipment at the Cavendish Laboratory for the past four years.

A third order came from a copper refinery in Northern Rhodesia for 10,000 A 325 V equipment. Six 400 kW 550 V equipments go to the Johannesburg trolley-bus system, 2,550 kW for Amsterdam, and equipments for steel mill drives and auxiliaries include two 1,650 kW 660 V rectifiers with grid voltage control for starting the rod mill motors and with combined grid and tap-changer control for speed variation.

A number of heavy steel drives have been completed at home and in Australia, as well as several sets of auxiliary drives; for example, an order for over 50 d.c. motors for the tables, shears, etc., of a large hot mill in the Midlands, these motors being designed to work at different voltages according to the product being rolled, the voltage being adjusted by a small booster set in conjunction with the ordinary works d.c. supply.

Turning to mining plant, the first twin a.c. hoist in the world with series connected rotors was commissioned in South Africa, the electrical equipment being of English Electric make. The combined r.m.s. rating is 3,260 h.p. and composite excitation d.c. dynamic braking is incorporated. Even with power in South Africa at 0.24d/kWh an annual saving in energy cost of £2,100 will result compared with the cost when using reverse current braking. Five of these equipments are on order for existing hoists having driving motors not of English Electric manufacture; 59 dynamic braking equipments have been ordered to operate with motors of an aggregate of 86,061 (r.m.s.) h.p.

Among plant for home duty is a 2,515 h.p. Ward-Leonard controlled directly coupled Koepe pulley hoist and a 1,750 h.p. geared a.c. hoist with d.c. dynamic braking. The former will have a 23ft diameter pulley and raise 245 tons of coal per hour from an ultimate depth of 3,420 ft at a maximum speed of 3,000 ft/min; a controlled exciter will ensure a predetermined rate of acceleration from any position of the conveyances in the shaft. The a.c. hoist will be the first electric skip in the North Staffordshire area and also the largest a.c. hoist in England and Wales; it will raise 350 tons per hour from a depth of 1,590ft with a maximum rope speed of 1,764 ft/min.

Comprehensive contracts have been undertaken for the electrification of textile milles at home and in India.

Railway Equipment

New traction orders came from the South Australian Railways for sets of engines and electrical equipment for 1,600 h.p. main line diesel-electric locomotives. A large replacement order from the Polish State Railways includes equipments and part equipments for thirty 3-coach electric trains, nine substations and spare parts; also 41 semi-standard 350 h.p. diesel-electric shunting locomotives for British Railways, the Netherlands State Railways and the Sudan Railways, a further order from Tasmania for 600 h.p. diesel-electric equipments and from the Danish State Railways for twenty-four motor coach and trailer coach equipments and a quantity of traction motors.

Over 60 per cent of the company's refrigerators and considerable shipments of cookers, washing machines, food mixers and plate warmers went overseas.

NEXT WEEK'S EVENTS

Monday, 9th January

BIRMINGHAM.—Imperial Hotel, 6 p.m. I.E.E. South Midland Supply and Utilization Group. "Polyphase Commutator Machines," by B. Adkins and W. J. Gibbs.

LEEDS.—Lighting Service Bureau, 24, Aire Street, 6 p.m. I.E.S. Leeds Centre. "Rare Gas Lamps—the Gas Arc," by H. W. Cumming.

LONDON.—Savoy Place, W.C.2, 7 p.m. I.E.E. London Students' Section. Paper on "The Students' Sections' Tour to Norway." A film of the tour will also be shown.

NEWCASTLE-ON-TYNE.—Neville Hall, Westgate Road, 6.15 p.m. I.E.E. North-Eastern Centre. Lecture on "Some Aspects of Agricultural and Horticultural Electrification in North America," by F. E. Rowland.

Tuesday, 10th January

BELFAST.—Queen's University, 6.45 p.m. I.E.E. Northern Ireland Centre. "Selection of Transformers for Use in Distribution Networks, with special reference to the New Low-Voltage Standard of 240 Volts," by E. Tobin.

DERBY.—Electricity Showrooms. I.E.E. East Midland Centre. "Electrical Weighing," by Dr. H. I. Andrews.

LEEDS.—Lighting Service Bureau, 24, Aire Street, 6.30 p.m. I.E.E. North Midland Utilization Group. "The Automatic Control of Lead-Acid-Battery Charging Equipment," by R. A. Hervey.

LONDON.—Savoy Place, London, W.C.2, 5.30 p.m. I.E.E. Education Discussion Circle. Discussion on "The Organization of Laboratory Work," to be opened by J. G. Fleming.

Lighting Service Bureau, 2, Savoy Hill, W.C.2, 6 p.m. Illuminating Engineering Society. "Discomfort Glare in Relation to the Lighting of Buildings," by R. G. Hopkinson and P. Petherbridge.

MANCHESTER.—Engineers' Club, Albert Square, 6.15 p.m. I.E.E. North-Western Supply Group. "The Performance of the British Grid System in Thunderstorms," by Dr. J. S. Forrest.

WIMBLEDON.—Compton Hall, Compton Road, 8.15 p.m. A.S.E.E. South-West London Branch. "Rectifiers," by C. H. Brown.

Wednesday, 11th January

BRADFORD.—Midland Hotel, 7.30 p.m. A.S.E.E. Bradford Branch. "X-Ray and its Application," by E. Hudson.

CARDIFF.—South Wales Electricity Board Demonstration Theatre, The Hayes, 5.45 p.m. I.E.C., Cardiff Centre. Presidential address by Dr. J. N. Aldington.

EDINBURGH.—Heriot-Watt College, 7 p.m. I.E.E. Scottish Centre. "The Measurement of Light and Colour," by G. T. Winch.

LONDON.—Savoy Place, London, W.C.2, 5.30 p.m. I.E.E. Radio Section. "The Relative Merits of Presentation of Bearings by Aural-Null and Twin-Channel Cathode-Ray Direction-Finders," by S. de Walden and J. C. Swallow. "Some Experiments on the Accuracy of Bearings taken on an Aural-Null Direction-Finder," by F. Horner.

At the Institution of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. Institution of Heating and Ventilating Engineers. "Domestic Hot Water," by J. C. Weston.

MAIDSTONE.—Royal Star Hotel, 7.30 p.m. A.S.E.E. Kent Branch. "Mineral Insulated Cable."

NORTHAMPTON.—Northampton and District Electrical Association. "Space Heating."

PRESTON.—Harris Institute, Corporation Street, 7 p.m. I.E.E. North Lancashire Sub-Centre. "The Performance of the British Grid System in Thunderstorms," by Dr. J. S. Forrest.

Thursday, 12th January

DUNDEE.—Royal Hotel, Union Street, 7 p.m. I.E.E. North-East Scotland Sub-Centre. "The Measurement of Light and Colour," by G. T. Winch.

LEICESTER.—At East Midlands Electricity Board's Demonstration Theatre, Charles Street, 6.30 p.m. I.E.S. Leicester Group. "Display Lighting," by F. Jamieson.

LONDON.—Savoy Place, London, W.C.2, 5.30 p.m. Institution of Electrical Engineers. "Radar Echoes from Precipitation" (Radio Section paper), by J. E. N. Hooper and A. A. Kippax.

MANCHESTER.—College of Technology, 6 p.m. I.E.S. Manchester Centre. "Analysis of Lighting Problems in an Industrial Undertaking," by F. G. Copland.

PENGAM.—School of Mines, 6 p.m. Association of Mining Electrical and Mechanical Engineers, South Wales Branch. "Power Measurement at Collieries," by T. L. Price.

WANDSWORTH.—Technical College, 7 p.m. Institute of Welding, South London Branch. "Sheet Metal Welding," by C. E. Slade.

Friday, 13th January

ABERDEEN.—Robert Gordon's Technical College, 7.30 p.m. I.E.E. North-East Scotland Sub-Centre. "The Measurement of Light and Colour," by G. T. Winch.

BIRMINGHAM.—Imperial Hotel, Temple Street, 6 p.m. Illuminating Engineering Society (Birmingham Centre). Symposium of papers.

LEEDS.—Guildford Hotel, 6.30 for 7 p.m. Leeds Electrical Club. "Coming of Age" dinner.

LONDON.—Caxton Hall, S.W.1, 6.30 p.m. E.P.E.A. Southern Meter Engineers' Group. "Cleaning by Trichlorethylene," by C. F. Ditchfield.

NOTTINGHAM.—Spread Eagle Hotel, Goldsmith Street, 8 p.m. A.S.E.E. Nottingham Branch. "Electronics in Industry," by F. E. Noakes.

PONTYPRIDD.—School of Mines, 6 p.m. Association of Mining Electrical and Mechanical Engineers, South Wales Branch. "Power Measurement at Collieries," by T. L. Price.

Saturday, 14th January

BARNSLEY.—Association of Mining Electrical and Mechanical Engineers (Yorkshire North-West Branch). "Overhead Transmission," by H. V. Nunn.

Lighting Improvements

New Ideas at the Lighting Service Bureau

PRACTICAL suggestions for improving illumination and at the same time making greater use of colour, both for utilitarian and decorative purposes, are made at the Lighting Service Bureau, 2 Savoy Hill, London, W.C.2, which has just been redecorated and rearranged.

In the Domestic Section, apart from several displays indicating various effects produced by the introduction of colour, there are three ceiling treatments for use in public, commercial and industrial buildings available for comparison. One shows "saw tooth" treatment with fluorescent lamps mounted at the apex of each section, while the second makes use of louvres with cells of two sizes, the larger being coloured to appear entirely blue or pink when seen in opposite directions. In the final scheme bare fluorescent lamps are mounted behind small-mesh blue-anodized expanded aluminium, the overlapping suspended square frames also housing fluorescent lamps for indirect illumination on the centre of the ceiling.

A representation of a modern kitchen shows two methods of general lighting for the cooker and sink unit one with a 5ft fluorescent lamp behind a pelmet and the other with a 4ft ceiling-mounted enclosed fitting, a tungsten fitting operated by a full switch giving additional lighting for the cooker. A 3ft fluorescent lamp built in to the bottom of the cupboard lights both working area below and cupboard interior above. A false window with a blue background lighted

Methods of lighting cooker and sink units

General view of the Domestic Section of the E.L.M.A. Lighting Service Bureau including a comparison of three ceiling treatments

by surrounding daylight fluorescent lamps is a suggested treatment for basements.

Other ideas for the home include curtains illuminated by a fluorescent lamp behind the pelmet; lighted shelves, panels, alcoves, fireplaces, etc.; an illuminated niche in the cupboard door; lighted china and glass cabinets; three methods of stair lighting; and bedhead and dressing table lights.

Facilities for the comparison of the effects of different types and combinations of lighting are provided in the Architectural Section. The reflecting qualities of various types of wall surface are also demonstrated, together with several simple yet striking effects, including the use of the conduit serving the lamps as a decorative feature.

At a Press view of the redecorated Bureau, Mr. E. B. Sawyer, the manager, pointed out that with the development of fluorescent lighting it was now possible to get three times as many lumens per watt input as it was five years after the first world war. Drawing attention to the possibilities for lighting in connection with the Festival of Britain in 1951, he emphasized that the scope of the scheme was nation-wide and not only confined to London. He took the opportunity of introducing a new E.L.M.A. handbook "Electric Lamps" which, besides tracing the history of lighting, contains in its 150 pages comprehensive data relating to every type of lamp in common use to-day.

Speaking of recent lighting progress, Mr. W. J. Jones, director of E.L.M.A., mentioned the constant efforts being made to improve the quality of lighting and referred to the introduction of the new "Mellow" fluorescent tubes. This country, he said, had not a lot to learn from the United States in the matter of illumination, and during the twenty-five years in which he had been associated with E.L.M.A. the amount of lighting used per capita had increased five times as compared with only half that amount in the U.S.A. A good deal of work still remained to be done, however, to make up for the war years.

SITUATION IN MEXICO

PLANS FOR INCREASED ELECTRIFICATION

CONDITIONS during the last war acted as a stimulant to the industrialization of Mexico; established industries were expanded and new ones started. In his report on the economic and commercial conditions in Mexico, published for the Board of Trade by H.M. Stationery Office at 1s 3d net, Mr. W. W. McVittie, Counsellor (Commercial) to H.M. Embassy in Mexico City, D.F., says that the Nacional Financiera, S.A., a Government institution, encourages new industrial development by granting credit, and among the industries financed in recent years are electrical goods and electrolytic copper.

The total capacity of electric power plants installed in Mexico amounts to 1,040,000 kW, of which 812,000 kW is the capacity of public service plants in factories. The Federal Electricity Commission, a governmental body, received a loan of 24.1 million U.S. dollars early in 1949 from the International Bank for Reconstruction and Development towards its vast plan to increase electrification throughout the country. Similarly, the Mexico Light & Power Co. received a loan of 10 million U.S. dollars from the same bank for the same purpose, and will receive further loans when certain conditions laid down by the Bank have been fulfilled. Judicious use of steam and diesel plant has been planned to supplement water power which is subject to seasonal changes.

Mr. McVittie tabulates the principal imports in 1947 and 1948, from which we have extracted the following electrical items. The sterling-peso selling rate was 34.88 pesos to the £ until 19th September last when it became 24.25 to the £.

Commodity	1947	1948
	in 1,000 pesos	
Insulated wires and cables ...	13,363	9,921
Telephonic and telegraphic apparatus	9,534	17,851
Radio transmitters	2,308	2,321
Radio valves	3,437	5,371
Spares for radio receivers and transmitters	3,368	8,682
Electricity meters	3,178	4,645
Electric generators and motors	24,402	42,015
Electric switches, etc.	11,991	14,799

United Kingdom exports to Mexico in 1948 included telegraph and telephone wires and cables, other than submarine, of a total value of £48,000, and other electrical goods valued at £53,000.

FINANCIAL SECTION

Company Notes and Stock Exchange Activities

REPORTS AND DIVIDENDS

The Perak River Hydro-Electric Power Co., Ltd., held its annual meeting on 29th December, when Mr. W. Shearer (chairman), who presided, said that there was a steady increase in load during the year under review. The peak load rose from 38,500 kW to 43,500 kW, and 272 million kWh was generated, an increase of 15 per cent as compared with the previous year. A more rapid advance in load had been expected, but the programme was delayed by the slow delivery of equipment to themselves and many of their principal consumers. The decrease in revenue was due partly to the drought experienced at a period when high water conditions were expected and also to an increase of £74,208 in operating expenses. Good progress was maintained in the programme of rehabilitating their properties, but a number of major works had still to be undertaken. There was no abatement in the demand for power during the year, and it was anticipated that with present commitments the system would be operating at full capacity during 1951. In addition, there was a considerable unsatisfied demand and a recent survey indicated that the potential load in the vicinity of their network was about 20,000 h.p.

Aberdare Cables of South Africa, Ltd., held its annual meeting on 13th December at Port Elizabeth, Sir George Usher presiding. In the course of his speech the chairman said that the factory was now complete, the whole of the plant and machinery had been installed and production in all departments had already reached a high level. A steady flow of orders was being received including repeat orders from municipalities, Government Departments and mining houses. Of the material used, 85 per cent previously imported was now being obtained from Union sources or from the Rhodesias, and the company's policy would be to continue to utilize South African materials to the highest possible degree.

The Plessey Co., Ltd., held its annual meeting on 30th December, Mr. A. G. Clark (chairman and managing director) presiding. In his circulated statement the chairman says that the profit for the year would have been higher had the conditions obtaining in the earlier months of the year continued throughout. However, early in 1949 deterioration in business became evident, and this position was aggravated by uncertainty with regard to possible changes in purchase tax which might be contained in the Budget. These adverse conditions persisted past the end of the financial year on 30th June, but improvement has now taken place and he is hopeful that the improvement will be continued over the next few months. Beyond that point it is, in these difficult days, difficult to speak with any certainty.

The Madras Electric Supply Corporation, Ltd., held its annual meeting on 30th December, when Mr. K. A. Scott-Moncrieff (chairman), who presided, said that on the credit side of the balance sheet the chief item was their expenditure on works and stores, £1,889,013. These were taken over by the Government of Madras on 29th August, 1947, against which they had the valuation of £1,791,181. On 12th December the Government of Madras informed them that, in its opinion, the valuation was excessive and it might consequently have to resort to arbitration. The directors were now advised that no difficulty should be anticipated in obtaining the Court's consent to a reduction of capital. Accordingly, active steps were now being taken to place a resolution before the stockholders embodying a reduction of capital to be effected by the repayment of the preference stock.

The English Electric Co., Ltd., has under consideration a programme of financing which includes an issue of debenture stock and a small rights offer of ordinary shares to ordinary holders. The company states that in view of its expanding business, the opportunity is being taken to obtain authority for a total ordinary share capital substantially in excess of what is now required for the issue contemplated. Accordingly an extraordinary meeting will be held on 16th January to consider a proposal to increase the capital to £8,000,000 by the creation of 1,500,000 ordinary shares of £1, to rank *pari passu* in all respects with the existing ordinary. As soon as any of the new ordinary shares have been issued and paid they will be converted into stock.

The Kalgoorlie Electric Power & Lighting Corporation, Ltd., has completed arrangements with the Beaver Trust to underwrite an issue of £250,000 5 per cent convertible redeemable debenture stock for

the purpose of financing a major plant extension programme. The stock will be offered to shareholders at par.

Radio Rentals, Ltd., reports a net profit, subject to audit, for the year ended 31st August last of £138,654, as compared with £89,244 for the preceding year. The final dividend is 15 per cent (against 17½ per cent), again making 25 per cent for the year.

It is proposed to raise £50,000 more capital by offering to ordinary shareholders 100,000 additional 5s ordinary shares at a price of 10s each in the proportion of one new share for every six held.

NEW COMPANIES

Leonard Wadsworth & Co., Ltd.—Registered 23rd December. Capital £1,000. Electricians, radio and electrical engineers, etc. Solicitors: Paisner & Co., 4, Gower Street, W.C.1.

Alex. J. Walker (Wembley), Ltd.—Registered 23rd December. Capital £100. Manufacturers of and dealers in sound reproducing equipment, etc. Directors: A. J. Walker, G. M. Walker and D. J. Shadlish. Regd. office: 394, Northolt Road, South Harrow, Middlesex.

Televideo, Ltd.—Registered 22nd December. Capital £2,000. Manufacturers of and dealers in electrical and mechanical apparatus and accessories, wireless and television sets, etc. Directors: I. Blankstone and Flora M. Blankstone. Regd. office: 18-19, Stafford Street, Wolverhampton.

D. Inman, Ltd.—Registered 17th December. Capital £10,000. To acquire the business of an electrical and radio wholesaler carried on by D. Inman at Nile Street, Lancaster. Directors: D. Inman and Alma D. Inman. Regd. office: Nile Street, Lancaster.

Lincoln Batteries, Ltd.—Registered 20th December. Capital £3,500. Electrical accumulator manufacturers and dealers, etc. Directors: G. H. Negus, R. H. Negus and D. C. Negus. Regd. office: Lincon Works, Arterial Road, Southend-on-Sea.

Cooke & Shepherd, Ltd.—Registered 20th December. Capital £500. Electrical contractors, etc. Directors: E. T. Cooke, Kathleen Cooke, G. Shepherd and Nellie Shepherd. Regd. office: 45, Northgate, Cleckheaton, Yorks.

Radar Electronic Equipment, Ltd.—Registered 21st December. Capital £500. Manufacturers and repairers of and dealers in radar equipment, radio apparatus, etc. L. P. Goddard is the first director. Regd. office: 52/4, High Holborn, W.C.1.

C. E. Lane (Neon), Ltd.—Registered 16th December. Capital £100. Manufacturers of and wholesale and retail dealers in neon luminous tubes and electrical appliances, etc. Directors: C. E. Lane and Kathleen M. Lane. Regd. office: 485, London Road, Westcliff-on-Sea.

LIQUIDATIONS

Seagull & Brown, Ltd.—Winding up voluntarily. Liquidator, Mr. A. E. Attwood, Queen Street Chambers, 90, Queen Street, Cheapside, London, E.C.4.

Llanidloes Electric Light Co. (1926), Ltd.—Winding up voluntarily. Liquidator, Lily S. Deacon, 87, Tettenhall Road, Wolverhampton. Particulars of claims to the liquidator by 28th January.

BANKRUPTCIES

G. L. Milton, formerly carrying on business in co-partnership with another as Electric Radio at 44, High Street, Buxton, Derbyshire, electrical contractor.—Receiving order made 13th December on debtor's own petition. First meeting 10th January at the Official Receiver's office, 20, Byrom Street, Manchester. Public examination 6th February at the Court House, Vernon Street, Stockport.

L. O. Richardson, The Bungalow, Norway Lane, Littlehampton, Sussex, electrical contractor.—First and final dividend of 4s 7½d in the £, payable 6th January at the office of Mr. A. E. Orbell, 6 and 7, Old Steine, Brighton, 1.

A. Foulkes, 7, Great George Street, Weymouth, electrical engineer.—Receiving order made 20th December on a creditor's petition.

N. I. Wagstaff, residing at 145, Lodge Lane, Dukinfield, Ches., electrician, and formerly carrying on business with another as Wagstaff & Williams, electrical contractors, at 145, Lodge Lane, Dukinfield.—First meeting 12th January at the Official Receiver's office, 20, Byrom Street, Manchester. Public examination 27th February at the Town Hall, Ashton-under-Lyne.

R. H. Ball, 36, Whitefriars Road, Hastings, radio engineer, formerly residing at 12, The Parade, Leamington Spa, and carrying on business at Gordon Street, Leamington Spa, as a radio and electrical manufacturer.—Trustee, Mr. R. K. Clark, Somerset House, 37, Temple Street, Birmingham, 2, Official Receiver, released 21st December, 1949.

M. R. Horne, carrying on business at 491, Alum Rock Road, Birmingham, as Malcolm & Stewart, wireless and electrical retailer.—Last day for receiving proofs for dividend 17th January. Trustee, Mr. R. K. Clark, Somerset House, 37, Temple Street, Birmingham, 2, Official Reciever.

STOCKS and SHARES

THE New Year entered the Stock Exchange markets quietly, and without producing any dramatic price changes. The unsatisfactory character of the recently published Revenue returns for the first nine months of the year caused a certain amount of selling of gilt-edged stocks. Of these, British Transport "threes" and British Electricity "threes" gave way, in common with other gilt-edged issues. The industrial list has undergone little change since a week ago. Opinion is inclined to the view that the General Election will take place next month. Cable and Wireless ordinary stock at 251 retains all its recent substantial rise.

Tables are given below by way of supplement to those set out here last week, which compared present prices with the quotations of a year ago. Comparisons in the following cases are with the highest and lowest quotations recorded during the course of a difficult twelvemonth by some of the popular electrical engineering and equipment shares. Best prices were generally marked in the early part of the year.

Equipment and Manufacturing

Dividend limitation again ruled out most of the scope last year for outstanding individual performances among industrial shares. The accompanying comparisons show that electrical engineering shares conformed fairly closely to the general course of prices, finishing a good deal nearer the lowest than the best prices of the year:—

Ordinary	Prices 1949 High	Low	Dec. 30 1949
Aberdare Cables	68/-	49/9	52/6
A.E.I.	80/3	68/3	70/-
Automatic Telephone ...	65/6	50/-	54/6
B.I.C.	36/3	28/6	32/-
Brush	7/4	4/10	6/3
Crompton Parkinson ...	28/9	21/6	24/6
English Electric	49/6	40/9	45/6
G.E.C.	92/3	70/9	75/6
Henleys	26/6	21/-	22/6
Reyrolle	66/-	55/6	57/6
Siemens	36/6	29/6	30/-

Miscellaneous Markets

As compared with the heavier engineering group, electrical shares of various descriptions have given a more mixed performance. This is a representative group:—

Ordinary	Prices 1949 High	Low	Dec. 30, 1949
Cable & Wireless ...	251	213	251
Lucas	91/9	67/6	82/6
Ever Ready	38/9	26/-	28/9
Tube Investments... ...	6.13/16	5.5/16	5¾
Telephone Properties ...	15/3	8/6	15/-
E.M.I.	22,3	14/-	18/-
Pye	33/-	22/-	31/6
Cossor	11/3	4/9	8/9
E. K. Cole	18/-	10/6	17/6
McMichael	4/4	2/6	4/3
Scophony	4/-	2/3	3/6

In the foregoing tables, the radio and television group carries off chief honours by starting this year with prices near the best recorded in 1949. This, of course, is due to the success of the Sutton Coldfield station.

New Issues

Crompton Parkinson at the close of the year stood at 23s 6d. The price this week has been quoted ex the bonus shares. For each ordinary, or "A" ordinary, the holder receives one "A" ordinary, the market effect of which is to divide the prices in half. Both classes are now quoted at 12s middle. Since the turn of the year, there has been a demand for Siemens, the price hardening to 31s 3d. The English Electric Company—the group employs 35,000 workpeople, and wants more, says the chairman—proposes to increase the capital by £1½ millions, to £8 millions. The meeting to consider the matter will be held on Monday, 16th January. It is proposed that debenture stock and a small "rights" issue of ordinary shares shall be authorized.

Yields Compared

Current returns of 4 to 4½ per cent on well-secured preference shares are about one per cent better than the yield on the medium and longer-dated Government stocks. British Electricity 3 per cents 1968/73, for instance, at 95, yield £3 3s 6d per cent, or a little over 3¼ per cent if held to redemption. On the 1974/77 issue the yield, at 94, is about 1s per cent higher. Comparisons between gilt-edged and preference shares should, strictly speaking, take account of the higher dealing expenses incurred in the latter. Industrial shares involve a higher rate of commission as well as the 2 per cent transfer stamp from which British Government and certain other gilt-edged stocks are free. In the case of a share quoted around 20s, these two charges cost the buyer an extra 7½d per share—the equivalent of nearly eighteen months' interest, after tax, on a 4 per cent investment.

Electrical Investments

Past Month's Price Changes

Company	Dividend Previous	Dividend Last	Middle Price 30 Dec. 1949	Month's Rise or Fall	Yield £ s. d.
Overseas Electricity Companies					
Atlas Elec.... ...	2	2½	13/9	+9d.	3 12 9
Calcutta Elec. ...	6†	6†	24/-	—	4 18 0
Cawnpore Elec. ...	13	10	40/-	—	5 0 0
East African Power	7	7	33/9	+6d.	4 2 10
Jerusalem Elec. ...	5	6	14/3	−2/9	—
Madras Elec. ...	8	5	36/3	+¼	2 15 2
Nigerian Elec. ...	12½	10	33/9	−⅛	—
Palestine Elec. "A"	7†	Nil	28/6	—	—
Perak Hydro-Elec.	Nil	Nil	10/-	−1/-	—
Whitehall Inv. Pref.	—	6	23/-	+1/-	5 4 4
Equipment and Manufacturing					
Aberdare Cables ...	10	15	52/6	—	5 14 3
Aron Elec. Ord. ...	15	15	36/3	−⅛	8 5 8
Assoc. Elec. Ord. ...	15	15	70/-	—	4 5 9
Automatic Tel & El.	12½	12½	54/6	+2/9	4 11 9
Babcock & Wilcox	15	15	60/9	+9d.	4 18 8
Baldwin, H. J. (2/-)	25	25	5/3	—	9 10 6
British Aluminium	10	10	41/-	−6d.	4 17 7
B.I. Callender's ...	6⅜	6⅜	32/-	+1/-	4 3 6
British Thermostat (5/-)	23½	25	23/9	—	5 5 3
British Vac. Cleaner (5/-)	20	20	7/6	−6d.	13 6 8
Brush Ord. (5/-) ...	—	10	6/3	+6d.	8 0 0
Burco (5/-) ...	35	35	19/6	+9d.	8 19 6
Chloride El. Storage	20	20	45/9*	+1/6	4 7 4‡
Cole, E. K. (5/-) ...	22½	20	17/6	+5/6	5 14 3
Cossor, A. C. (5/-)...	Nil	Nil	8/9	+2/9	—
Crabtree (10/-) ...	17½	17½	32/6	—	5 7 8
Crompton Parkinson Ord. (5/-) ...	22½	22½	24/6	+9d.	4 11 0
De La Rue (5/-) ...	50	50	22/6	+1/6	11 2 2
Decca (1/-) ...	112½	112½	12/9	+3d.	8 16 3
E.M.I. (10/-) ...	8	8	18/-	+2/9	4 9 0
Electrical Components (5/-) ...	20	20	10/9	+9d.	9 6 0
Elec. Construction	12½	12½	46/6	—	5 7 9
Enfield Cable Ord.	7½	7½	28/3	+9d.	5 6 2
English Electric ...	10	10	43/6	+1/-	4 12 0
Ericsson Tel.(5/-) ...	20†	20†	40/-	+2/6	2 10 0
Ever Ready (5/-) ...	40	40	28/9	+1/9	6 18 10
Falk Stadelmann ...	15	15	36/3	—	8 5 6
G.E.C. Ord. ...	17½	17½	75/6	+3/-	4 12 7
General Cables (5/-)	50	50	17/6	−⅛	8 11 6‡
Greenwood & Batley	15	15	37/6	−¼	8 0 0
Hackbridge Cable (5/-)	—	20	11/9	—	8 10 2
Hackbridge Hewittic (5/-)	12	12½	11/-	—	5 13 8
Hall Tel. Acc. (10/-)	10	10	13/-	—	7 13 10
Heatrae (2/-) ...	12½	12½	4/-	—	6 5 0
Henleys (5/-) ...	20	20	22/6	+1/-	4 9 0
Hoover (5/-) ...	40	40	35/3	+3d.	5 13 8
Intl. Combustion (5/-)	37½	37½	17/3	−3d.	4 7 0‡
Johnson & Phillips	15	15	61/3	+2/6	4 17 6
Equipment and Manufacturing (continued)					
Lancashire Dynamo	22½	22½	92/6	+1/6	4 17 0
Laurence, Scott(5/-)	12½	12½	13/-	+9d.	4 16 2
London Elec. Wire	10	10	44/-	−1/-	4 11 0
J. Lucas	17½	17½	82/6	+3/9	4 4 9
Mather & Platt ...	11	11	47/3	+6d.	4 13 3
Metal Industries ...	10	10	42/-	—	4 5 3
Mid. Elec. Mfg. ...	35	35	53/9	—	—
Murex	20	20	45/9	+9d.	4 7 4‡
Newman Ind. (2/-)	22½	17½	3/6	—	—
Oldham & Son (1/-)	60	60	5/3	+3d.	5 14 3‡
Plessey (5/-) ...	20	20	15/-	+1/6	6 13 4
Parsons C. A. ...	12½	12½	57/6	—	4 7 0
Pye Deferred (5/-)	25	25	31/6	+5/3	3 19 4
Radio & Tel. (2/-)	Nil	25	1/-	−6d.	—
Revo (10/-) ...	27½	27½	45/-	—	6 2 3
Reyrolle	12½	12½	57/6	—	4 6 10
Scophony Baird (1/-)	—	—	3/6	+6d.	—
Scot. Cable (4/-) ...	30	30	22/-	—	5 9 0
Siemens Ord. ...	7½	7½	30/-	—	5 0 0
Switchgear & Cowans (5/-)	20	20	13/-	—	7 14 0
T.C.C. (10/-) ...	15	15	32/6	—	4 12 4
T.C. & M. ...	10	10	37/6*	—	4 5 4‡
Telephone Mfg. (5/-)	9	9	8/6	—	5 6 0
Thorn Elec. (5/-) ...	25	20	18/9	+3/16	5 6 8
Tube Investments	25	25	5⅞	+1/16	4 5 0
Vactric (5/-) ...	Nil	Nil	11/3	+2/6	—
Veritys (5/-) ...	5	5	3/-	+3d.	8 6 8
Walsall Conduits (4/-)	70	70	53/9	—	5 4 1
Ward & Goldstone (5/-)	50	50	37/xr	—	5 8 1‡
Watford (2/-) ...	15	20	6/3	—	6 8 0
Westinghouse Brake	14	14	62/6	—	4 9 7
West, Allen (5/-) ...	10	10	7/3	+3d.	4 6 2‡
Transport and Communications					
Anglo-Am. Tel: Pref.	6	5 5/20	95	—	—
Def.	1½	1½*	12½	—	—
Anglo-Portuguese...	8	8	23/6	−6d.	6 16 2
Brit. Elec. Traction: Def. Ord. ...	50	50	1425	−500xr	3 6 4‡
Calcutta Trams ...	Nil	6†	24/6	−1/6	4 18 0
Cape Elec. Trams...	6	6	23/-	−2/-	5 4 4
Cable & Wireless: 5½ Pref. ...	5½	5½	99	—	5 11 0
Ord.	4	4	251	+21	—
Globe Tel. & Tel. Ord	5†	5†	40/-	+1/6	2 10 0
Great Northern Tel. (£10)	12	7	14	—	5 0 0
Inter. Tel. & Tel....	Nil	Nil	18½	—	—
Marconi Marine ...	7½	7½	25/-	—	6 0 0
Oriental Tel. Ord....	10	16	44/6	—	7 3 10
Telephone Props ...	6	6	15/-	—	8 0 0
Tele. Rentals (5/-)	10	10	10/-	+6d.	5 0 0

*Dividend postponed.

†Dividends are paid free of Income Tax.

‡ Yield adjusted to capital bonus issue.

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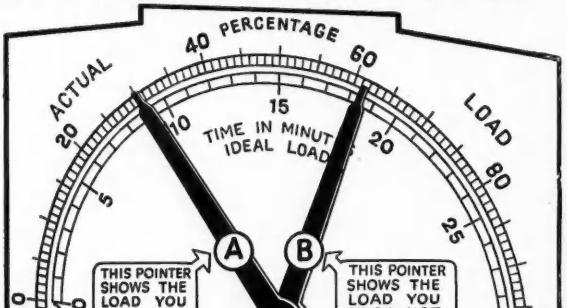
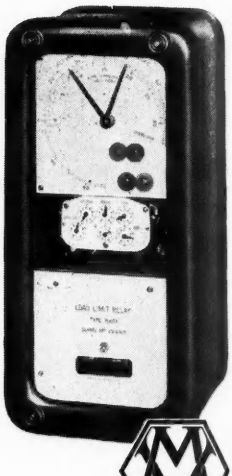

PERCENTAGE
ACTUAL
LOAD
TIME IN MINUTES
IDEAL LOAD
THIS POINTER SHOWS THE LOAD YOU ARE TAKING
THIS POINTER SHOWS THE LOAD YOU MUST NOT EXCEED
POINTER (B) RESETS TO ON REACHING THIS POSITION
OVERLOAD
POINTER (A) RESETS TO A PRE-ARRANGED POINT ON THIS SCALE AT END OF EACH HALF-HOUR PERIOD



The illustration shows Type MASI Load Limiter—one of the extensive range available.

If pointer (A) overtakes pointer (B) during any ½ hour period—load must be shed, until pointers are running together.

(1) An audible warning calls attention to the need for this to be done—

OR

(2) —relays operate to effect automatic load reduction.

Send for illustrated booklet S.P.7359/1.

METROPOLITAN-VICKERS ELECTRICAL CO. LTD.

TRAFFORD PARK, MANCHESTER, 17

G/H 802

ELECTRICITY SUPPLY

Month's B.E.A. Contracts Exceed £3,200,000

Progress of Uganda Scheme

DURING the past month contracts have been placed by the British Electricity Authority for power station, switching and transforming station and transmission equipment amounting in the aggregate to £3,208,385. The principal contracts include the following:—

Bankside generating station: 11 kV switchgear, A. Reyrolle & Co., Ltd., and 22 kV switchgear, Ferguson Pailin, Ltd.; Brunswick Wharf generating station: Ash disposal plant, International Combustion, Ltd.; Deptford East station: Foundations for turbine and switch houses, Mitchell Construction Co., and power transformers, Ferranti, Ltd.; Croydon "B" station: Station lighting and heating, Troughton & Young, Ltd.; North Tees station: Pipework equipment, Babcock & Wilcox, Ltd.; Skelton Grange station, Leeds: Turbine house frame and roof, Holst & Co., Ltd.; Chadderton station: Site clearance, M. J Gleeson, Ltd., and structural steelwork, Edward Wood & Co., Ltd.; Crimpsall station, Doncaster: Four 180 k. lb/hr boilers, Mitchell Engineering, Ltd.; Barking "C" station: 90 MVA 132 kV reactors, Metropolitan-Vickers Electrical Co., Ltd.; Rayleigh substation, Essex: 33 kV 750 MVA switchgear, A. Reyrolle & Co., Ltd.

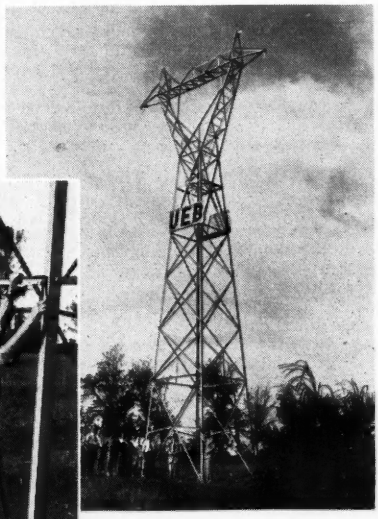
Prompt Action

Two breakdowns in private plants recently in its No. 5 Sub-Area, resulted in the North Western Electricity Board being called upon to take over load and render assistance at short notice. A d.c. generator in the Sun Paper Mill, Blackburn, which was due to be replaced by public supply at an early date, broke down. The Board carried out a temporary installation and connected the supply to a rectifier bank within 24 hours.

The other case was that of a mill of Standworth & Co., Ltd., Nelson, where a 250 h.p. steam engine was on the point of breaking down. The Board's local staff, in conjunction with an electrical contractor, installed and connected a 220 h.p. motor over the week-end, with the result that no production was lost in the mill. The 220 h.p. motor is to be replaced by group drive as soon as practicable.

Uganda Transmission Line

One of the first stages of the Owen Falls Hydro-Electric Scheme is the construction of a 66 kV single circuit overhead line to be erected between the site of the Owen Falls power station and the recently constructed Kampala "B" power station.



Mr. C. R. Westlake, Chairman of the Uganda Electricity Board tightening the final bolt on the first tower of the Jinja-Kampala transmission line. With him is Mr. J. C. Lithgow, resident partner of Messrs. Kennedy & Donkin

The line is intended to operate initially at 33 kV and will supply power from Kampala to assist in the constructional work of the dam. Eventually it will operate at 66 kV and will supply Kampala from Owen Falls. This line will be the first of the two circuits to serve this latter purpose. It is believed that this will be the first overhead high voltage line of its kind in East Africa. The final bolt was inserted in the first tower by the chairman of the Uganda Electricity Board, Mr. C. R. Westlake, M.I.E.E., during a short ceremony. Constructed on steel towers 55ft 6in above ground the line will be some 44 miles long, involving the use of 236 supports. The route follows the new Kampala-Jinja road alignment for a distance of approximately 14 miles, but beyond this point several deviations are necessary. The consulting engineers to the Board are Kennedy & Donkin and British Insulated Callender's Construction Co., Ltd., are the overhead line contractors.

Reinforcement at Howe Bridge

Two 20 MVA transformers with in-phase and quadrature boost have been installed at Howe Bridge substation on the end of a double circuit 33 kV grid line. These are the first transformers with quadrature boost to be installed in the North Western Area. They enable the feeders to be loaded to their full capacity while operating in parallel with an existing network of underground cables and thus give much needed reinforcement. A trial on the morning of 28th November when the load came up showed the use of the controls to be simple and effective.

Oldham Centenary Illuminations

The North Western Electricity Board is giving extensive assistance in connection with the month of illuminations organized by the Oldham Corporation (No. 3 Sub-Area) from 10th December to 7th January to mark its centenary. For festooning the main thoroughfare 8,000 yd of strip lighting, supported by 100 poles to supplement street lighting standards, are used. Animated set pieces from Blackpool have been transported to Oldham and public buildings are floodlit.

Main Road Lighting

By invitation of the Midlands Electricity Board, members and officials of the Wellington (Salop) Rural District Council met representatives of the Board at a dinner at the White Horse Hotel, Donnington, to celebrate the completion of a new street lighting scheme on the main road at Donnington.

Alderman Walter Lewis, O.B.E., J.P., chairman of the Board, said there was no reason why the whole of the road from Birmingham to Shrewsbury should not be lighted, provided there was co-operation on all sides. On behalf of the Revo Electric Co., Ltd., which carried out the scheme, Mr. P. Tonks, a director, presented souvenir replicas of the Donnington street lamps to the chairman and clerk of the R.D.C.

Fluorescent Street Lighting

The East Midlands Electricity Board has offered to install a system of fluorescent lighting in the Market Place, Nuneaton, for an experimental period, so that the Borough Council may have an opportunity of judging this kind of lighting. The offer comes at a time when the lighting of a number of the principal streets in the town is being considered.

Village Supplies

The North of Scotland Hydro-Electric Board brought a supply of electricity to the village of Luss, Dunbartonshire, one of the prettiest villages in Scotland, for the first time on 21st December.

The "switch on," which was performed by Lady Colquhoun of Luss, brought electricity to 40 houses in the village. The remainder, which have been wired, will be connected to the supply early in 1950. After the ceremony Lady Colquhoun opened a two-day exhibition of electrical appliances in the village hall.

An electricity supply was recently switched on at the village of Kirby Underdale, on the edge of the Yorkshire Wolds. The village is part of Lord Halifax's Garrowby estate and the scheme of electrification sponsored by the estate company will take in 40 isolated farms and hamlets in the next two years. Lord Halifax said that when he was British Ambassador in Washington nothing impressed him more than the way every little farm had an electricity service.

Council House Improvements

Bradford City Council has decided to borrow nearly £300,000 to provide new fireplaces and gas or electric cookers in more than 6,000 houses to replace the existing cooking ranges. As the improvements average about £50 per house, tenants will have their rents increased by 8 per cent, or about 1s 6d a week, if the full £50 is spent.

Manchester Lighting Conversion

A recommendation of the Manchester Highways Committee provides for the completion of the street lighting electrification scheme within the next ten years.

NEW PATENTS

Electrical Specifications Recently Published

The numbers under which the specifications will be printed and abridged are given in parentheses. Copies of any specification (2s each) may be obtained from the Patent Office, 25, Southampton Building, London, W.C.2.

1943

13467. Lalewicz, S.—Gas-filled electric-discharge devices. 18th August, 1943. Cognate application 21344/43. (633404.)

1944

5273. Philips Lamps, Ltd., and Holmes, T.—Electrical resistors. 21st May, 1944. (633686.)

1945

25299. Valensi, G.—High-speed telegraphic systems. 17th April, 1943. Cognate application 25300/45. (633688.)

29896. Patelhold Patentverwertungs- & Elektro-holding Akt.-Ges.—Systems of transmitting signals by means of electromagnetic waves. 13th November, 1944. (633620.)

31671. Landis & Gyr Soc. Anon.—Temperature-sensitive regulating device. 25th November, 1944. Addition to 609484. (633689.)

1946

4573. Marconi's Wireless Telegraph Co., Ltd.—Radio navigation aiding systems. 27th October, 1944. (633547.)

5088. Telegraph Construction & Maintenance Co., Ltd., Jones, F., and Hodkinson, J.—Connectors for high-frequency cables. 18th February, 1946. Cognate application 19821/46. (633406.)

10990. West & Co., A., and Bunyan, J.—Electric motor control systems. 10th April, 1946. (633407.)

14682. General Electric Co., Ltd., and Espley, D. C.—Amplification of electrical variations. 15th May, 1946. (633409.)

14972. Philips Lamps, Ltd.—Holders for electrical circuit components. 25th March, 1942. (633410.)

18802. Bull, E. W., and Holman, H. E.—Manufacture of electrical coils. 22nd June, 1946. (633625.)

21080. Marconi's Wireless Telegraph Co., Ltd.—Detection of angle-modulated waves. 14th July, 1945. (633477.)

31464. Shaper, H. B., and Franks, C. V.—Control of electric-discharge devices. 23rd October, 1946. (633417.)

32288. Dougherty, C. E., and Minor, jun., E. E.—Electronic remote control apparatus for monorail conveyor systems, hoists or the like. 30th October, 1946. (633703.)

33345. Standard Telephones & Cables, Ltd., and Feldhusen, I. V.—Electrical resistances. 9th November, 1946. (633418.)

33860. Philips Lamps, Ltd.—Circuits for equalizing the frequencies of two electrical oscillations. 3rd December, 1943. (633419.)

34663. M-O Valve Co., Ltd., and James, E. G.—Screens for thermionic valves. 22nd November, 1946. (633705.)

35538. Standard Telephones & Cables, Ltd., and Terry, V. J.—Copying telegraph receivers. 30th November, 1946. (633707.)

35760. Philips Lamps, Ltd.—Circuit-arrangements for converting current impulses into voltage impulses. 6th December, 1945. (633559.)

38044. Philips Lamps, Ltd.—Coated welding wire. 25th August, 1943. (633423.)

1947

1407. Marconi's Wireless Telegraph Co., Ltd., and Twatt, J.—Echo sounders and like devices for distance measuring in water. 15th January, 1947. (633490.)

1848. Cladeu, R. T., and Gibson, W. R.—Television apparatus. 21st January, 1947. (633424.)

5590. Standard Telephones & Cables, Ltd., Jacobsen, B. B., Roche, A. H., and Baly, W. F.—Automatic level control arrangements in carrier current communication systems. 26th February, 1947. (633428.)

5858. Interval Instruments, Inc.—Frequency determining unit. 28th March, 1946. (633429.)

7446. Standard Telephones & Cables, Ltd., and Robins, R. H.—Formation of metallized areas on surfaces of quartz and the like. 18th March, 1947. (633721.)

7529. Radio Corporation Proprietary, Ltd.—Reflex circuit arrangements. 25th March, 1946. (633430.)

8255. Bendix Aviation Corporation.—Fluid-pressure actuated electric switches. 25th April, 1946. (633638.)

8370. Bendix Aviation Corporation.—Snap-action mechanism for electric switches. 1st April, 1946. (633639.)

8855. Scarpa, G.—High tension electric switchboard. 1st April, 1947. (633640.)

9541. Bata, Narodni Podnik.—Tubular furnace walls for steam boilers. 21st May, 1941. (633726.)

9633. General Electric Co., Ltd., Hickin, E. M., and Tew, J. R.—Couplings for rigidly joining two lengths of electrical wave-guide. 10th April, 1947. (633433.)

10978. Philips Lamps, Ltd.—Circuits for the transmission of ultra-high-frequency oscillations. 3rd November, 1944. (633728.)

13538. Western Electric Co., Inc.—Wave-guide couplings. 21st June, 1946. (633503.)

13686. Radio Corporation of America.—Pulse multiplex communication system. 1st June, 1946. (633730.)

14519. Londex, Ltd., and Besson, A. P.—Light sensitive signalling devices. 2nd June, 1947. (633440.)

19190. Ritter Co., Inc.—Lighting units. 1st August, 1946. (633571.)

20803. Westinghouse Electric International Co.—Dynamo-electric machines. 15th August, 1946. (633664.)

20821. Ranzi, U.—Driving machines comprising a centrifugal clutch and an electric motor. 2nd August, 1946. Addition to 628960. (633446.)

21690. Sylvania Electric Products, Inc.—Apparatus for operating electric-discharge lamps in series. 26th October, 1940. (633448.)

22517. General Electric Co., Ltd., Pilkington, T. W., and Hamburger, R. — Selenium metal rectifiers and methods of manufacture therefor. 13th August, 1947. (633517.)

23407. Ericsson Telephones, Ltd., and Gunson, G. R.—Telephone circuits. 25th August, 1947. (633520.)

23654. Forges et Ateliers de Constructions Electriques de Jeumont.—Automatic control systems for electric locomotives. 25th February, 1942. (633577.)

23820. Forges et Ateliers de Constructions Electriques de Jeumont.—Arrangement for varying the starting current of electric traction motors in accordance with the vehicle load. 25th January, 1944. (633578.)

24103. British Thomson-Houston Co., Ltd., Griffiths, L., and Fardon, G. E.—Lighting systems for motor-vehicles and the like. 1st September, 1947. (633449.)

24189. American Cystoscope Makers, Inc.—Electro-surgical instruments. 7th September, 1946. (633451.)

24865. General Railway Signal Co.—Relays. 17th September, 1946. (633671.)

25942. Carruthers, R.—Circuit-arrangements for delivering intermittently a high peak current. 24th September, 1947. (633453.)

26811. Philco Corporation.—Electrical pulse systems. 28th December, 1946. (633673.)

26827. Soc. d'Exploitation de Brevets.—Dynamo-electric machines. 4th October, 1946. (633456.)

34146. Naamlooze Vennootschap Nederlandsche Kabelfabriek.—Joints for oil-insulated high-tension electric cables. 5th July, 1940. Cognate application 34147/47. (633594.)

1948

41. Allmanna Svenska Elektriska Aktiebolaget.—Electrical regulation systems. 11th January, 1947. (633597.)

1945. Philips Electrical, Ltd.—Circuit arrangements for amplifying frequency-modulated oscillations. 25th January, 1947. (633605.)

2143. General Electric Co., Ltd., and Turrall, J. C. —Safety devices for electrically driven vehicles. 23rd January, 1948. (633534.)

2196. Southport Electrical Services, Ltd., and Antrobus, W. E.—Electric cable connectors. 24th January, 1948. (633535.)

2329. Sperry Gyroscope Co., Inc.—Devices for measuring ultra-high-frequency electric power. 24th January, 1947. (633609.)

3975. Thomson, W. M.—Means for fixing trays, cables, pipes and other fittings to structural members. 11th February, 1948. (633751.)

5829. General Electric Co., Ltd., and Keeley, F. J.—Protective arrangements for electric circuits. 26th February, 1948. (633543.)

TRADE MARKS

APPLICATIONS have been made for the registration of the following trade marks. Objections may be entered within a month of the dates stated:—

21st December

STANBRIG. No. 676,074. Class 7. Electrically operated machines for industrial use for removing the eyes from potatoes.—Ernest E. Briggs, Ltd., Artillery House, Artillery Row, London, S.W.1.

UNIPORN. No. 681,196. Class 7. Electricity generators and parts thereof included in Class 7.—Porn & Dunwoody, Ltd., Union Works, Bear Gardens, London, S.E.1.

FERROGRAPH. No. B680,172. Class 9. Apparatus for recording, reproducing and amplifying electric oscillations, and parts, etc.—R. W. Merrick, 138, Sloane Street, S.W.1.

EKCO SLIMLINE. No. 673,780. Class 11. Installations and apparatus for lighting.—Ekco-Ensign Electric, Ltd., Ekco Works, Priory Crescent, Southend-on-Sea.

DARN-A-LITE. No. 677,169. Class 11. Electric hand torches.—Radio Electric Development (Crewe), Ltd., Excelsior Works, Walthall Street, Crewe, Ches.

MARBAT. No. 677,845. Class 11. Electric fires and portable electric ventilating fans.—Marsden & Bateson, Ltd., 67, Scholefield Street, Nechells, Birmingham, 7.

31st December

MULLARD.—No. B669,335. Class 7. Electric welding machines, parts and fittings, all included in Class 7; fluid actuated valves (parts of machines), liquid filters (being parts of engines, of machines, or of machine tools), electricity generators, dynamos for cycle lighting sets and dynamos for hand torches. MULLARD. —No. B669,338. Class 10. X-ray apparatus and instruments and X-ray tubes, all for surgical, medical, dental, veterinary, scientific and industrial purposes; and electro-medical apparatus; and parts of and fittings for all such goods, all included in Class 10; devices for protection against X-rays; and hearing aids for the deaf.—Mullard Electronic Products, Ltd., Century House, Shaftesbury Avenue, London, W.C.2.

No. 681,156 (design). Class 7. Electricity generators and electricity generating sets and parts included in Class 7.—Raylor Brothers, Ltd., Prince of Wales Buildings, 56, Lord St., Southport; and 81, Piccadilly, London, W.1.

MAGNAVOLT.—No. 667,968. Class 9. Electric automatic regulating apparatus included in Class 9 for the self regulation of variables.—English Electric Co., Ltd., Queen's House, 28, Kingsway, London, W.C.2.

ELLIOTTRONIC.—No. 677,875. Class 9. Electrical apparatus and instruments included in Class 9; scientific, nautical and surveying apparatus and instruments, etc.—Elliott Brothers (London), Ltd., Century Works, Lewisham, London, S.E.13.

INFORMATION DEPARTMENT

THE extensive records of our Information Department enable us to reply to most queries, but occasionally we ask for our readers' assistance in tracing names and addresses not known to us. We should be glad to have such information regarding the makers of the following:—

"Magic" air cleaners.

"C.L.T." transparent p.v.c. flex.

General inquiries from readers relating to sources of electrical goods, makers' addresses, etc., are replied to by the Information Department through the post. Inquiries should be accompanied by a stamped addressed envelope.

Malayan Imports

ELECTRICAL imports into Malaya during the first half of 1949 were valued at 17,166,000 dols. Some noteworthy items, with the shares of the United Kingdom and United States in the trade are given in the following table. (The Malayan dollar equals 2s 4d).

Class	Total Dols. (000)	U.K. Dols. (000)	U.S.A. Dols. (000)
Refrigerators	1,590	1,537	40
Submarine cables ...	294	294	—
Other telegraph and telephone wires and cables	881	878	—
Other wires and cables, rubber insulated ...	1,484	1,471	—
Other wires and cables	845	839	—
Radio receiving sets ...	1,930	1,226	4
Telegraph and telephone apparatus	1,376	1,375	—
Generators	809	351	431
Motors, 25 h.p. and under	365	328	33
Motors, 26 h.p.–100 h.p.	132	122	10
Motors, over 100 h.p....	106	106	—
Switchgear	400	375	24
Elec. machinery, unspecified	551	519	29

CONTRACT INFORMATION

Accepted Tenders and Prospective Electrical Work

CONTRACTS OPEN

Where "Contracts Open" are advertised in our "Official Notices" section, the date of the issue is given in parentheses.

Felling (Durham).—U.D.C.—Electrical work for 70 houses at High Lanes, Heworth. Plans by the housing architect, Council Offices.

Harpenden.—23rd January. U.D.C. Three centrifugal pumping units, electrically operated and automatically controlled, at the sewage disposal works. A. P. I. Cotterell & Son, engineers, 54, Victoria St., Westminster, S.W.1.

Hertfordshire.—25th January. County Council. Supply of electric lamps for one year from 1st April, 1950. Purchasing officer, The Old Rectory, Hatfield.

Lanark.—County Council. Street lighting fittings and columns. (See this issue.)

Northampton.—25th January. R.D.C. Electrical installations in 64 houses. R. J. Miller, architect, 1, Cheyne Walk, Northampton.

Southport.—16th January. Corporation. Installation of floodlighting and decorative tree lighting. (30th December.)

Uruguay.—MONTEVIDEO.—2nd February. Uziras Electricas y Telefonos del Estado. Porcelain inlets for cables. 3rd February. Porcelain insulators. (C.R.E. (I.B.) 37583/49. Ten/858.)* 23rd January. Administracion Nacional de Combustibles Alcohol y Portland. 300 metres of 220 V armoured cable. (C.R.E. (I.B.) 37760/49. Ten/857.)*

Warwick.—County Council. Firms wishing to have their names included in a list of approved contractors for heating, hot and cold water supplies, steam services, laundry and kitchen equipment, and electric light and power installations should apply to the county architect by 31st January. (See this issue.)

Yeovil.—25th January. Corporation. Street lighting scheme. (See this issue.)

ORDERS PLACED

Chester.—Corporation. Installation of lighting equipment at Grosvenor Museum (£1,058).—Merseyside & North Wales Electricity Board.

Hebburn-on-Tyne.—U.D.C. Electrical work in connection with erection of 38 houses (£1,716).—Tanjon (Newcastle), Ltd.

Kingston-on-Thames.—Corporation. Street lighting equipment in parts of London Road, Richmond Road, Eden Street and High Street (£2,424).—Engg. and Lighting Equipment Co.

Electrical installation work at new flats at Kingston Hill (£5,994).—South Eastern Electricity Board.

Northumberland. — Education Committee. Electrical installation at the Whitley Bay South County Primary School (£330).—J. W. Johnson.

Sunderland.—Town Council. Installation of a centralized vacuum system at Thorney Close Primary Junior and Infant Schools (£1,157). Similar work at Springwell Primary Junior School (£750).—British Vacuum Cleaner & Engineering Co.

Thornaby-on-Tees.—Town Council. Electrical installations in 32 houses (£821).—Tees Electric.

Torquay.—Corporation. Electrical installation work in connection with internal alterations at Municipal Chambers (£281).—Electrical & General Services, Totnes (in lieu of tender withdrawn).

CONTRACTS IN PROSPECT

Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.

Ashby Woulds.—Houses (50), Norris Hill; U.D.C. surveyor.

Batley.—Shops, flats and community centre, Staincliffe estate; borough surveyor.

Belper.—Houses (128), Allestree Park estate; U.D.C. surveyor.

Berwick.—Outpatients' department at Berwick Infirmary for Regional Hospital Board; Gardiner and Sons, builders.

Billingham-on-Tees.—College for further education; Myton, Ltd., builders, Hull.

Birkenhead.—Houses (66), various bombed sites; borough engineer.

Blackpool.—Primary school (£178,232), Grange Park; Atherton Bros. (Blackpool), Ltd., builders, 70, Peter Street.

Houses (16), Grange Park estate, for British Legion; C. H. Mackeith and Halstead Best, architects, Blackpool.

Buckingham.—Houses (45) for R.D.C.; Scherrer & Hicks, architects, 19, Cavendish Square, W.1.

Burton-on-Trent.—Works, Wellington Street; Hodgson & Hodgson, Ltd., Wesley Grove, Carrington, Nottingham.

Chatham.—Shops and offices, Whittaker Street; F. C. Mattocks, 28, Kingsway, Gillingham, Kent.

Cheadle.—Houses (74), Queen Street; J. W. Burton, R.D.C. surveyor.

Chesterfield.—Classroom block (£13,659), Mary Swanwick School; F. Robson, 48, Riversdale Road.

Completion of St. Augustine's Church; C. E. Gaunt & Sons, Ltd., Chesterfield.

Chorley.—Houses (56), Tootell Street; Baxendale Bros., Victoria Saw Mills.

* Specifications may be inspected at the Commercial Relations and Exports Department, Board of Trade, Thames House North, Millbank, S.W.1. Victoria 9040.

Clitheroe.—Houses (118), various sites; A. Clarkson, surveyor, R.D.C. Offices.

Consett.—Houses (60), Cutlers Hall estate, for U.D.C.; J. J. Eltringham, architect, Derwent Street, Blackhill.

Cumberland.—Laboratory wing at Whitehaven Grammar School; county architect, Portland Square, Carlisle.

Filey.—Houses (20), Muston Road site; U.D.C. surveyor.

Grantham.—Extensions to fire service headquarters; F. J. Lenton & Partners, architects, Grantham and Stamford.

Gwyrfai.—Factory, Penygroes (£50,000); D. H. Roberts, architect, Cwellyn, Caernarvon.

Hebburn-on-Tyne.—Houses (20) for U.D.C. Gustavus Bailey, Ltd., King Street, South Shields.

Knutsford.—Houses (14) for U.D.C.; J. Shaw, Broom House, Chester Road, Poyton, Stockport.

Lancaster.—Houses (20), Warton, and 12 agricultural cottages; K. H. Docton, surveyor, 5, Dalton Square, Lancaster.

Lanchester.—Outpatients' department at Leeholme Hospital for Regional Hospital Board; Thompson and Sons, builders, Church Chare, Chester-le-Street.

Leamington Spa.—Houses (42), Tachbrook Road; H. Fedeski, architect, 28, Parade.

Limehurst.—Houses (44), Waterloo estate; H. Bradshaw, R.D.C. Offices, 200, Oldham Road, Waterloo, Ashton-under-Lyne.

Liverpool.—Dwellings (18), Blenheim Street; Morter & Dobie, architects, Rumford Street, Liverpool.

March (Cambs.).—Houses (42), Peas Hill housing estate; U.D.C. architect.

Middlesbrough.—Rebuilding the Acklam Iron and Steel Works Athletic Club (£10,000); Kitching and Co., architects, 21, Albert Road.

Northants.—1950 schools programme: Wellingborough (secondary modern) and Kettering (junior secondary modern and technical institute); county architect, County Hall, Northampton.

Northumberland.—Schools at Seaton Burn and South Broomhill and kitchens and dining rooms at Ashington Wansbeck School and Dunstan C.E. School; county architect, County Hall, Newcastle-on-Tyne.

Poole.—Pathological block, General Hospital; P. A. Byrne & W. G. Seaton, architects, 44, Parkstone Road.

Reading.—Houses (116), Whitley Wood Road; borough architect.

Emmer Green primary school; E. G. V. Hives, architect, 3, Cork Street.

Offices and shops, Oxford Road and West Street; Wm. McIlroy, Ltd., Oxford Street.

Rothbury.—Houses (40); R.D.C. surveyor.

Rotherham.—Houses (76); O. Weaver & Sons, Ltd., Harlington Rd., Mexborough.

Rothwell.—Houses (32), Woodlesford, for U.D.C.; Dunhill Bros., builders, Bridge Works, Selby Road, Leeds.

Rowley Regis.—Civic restaurant; Batham & Beddall, Ltd., 9, Moor Street, Brierly Hill.

Ryde (I.o.W.).—Practical block, Bishop Lovett School; Thomas F. Ford, architect, 189, Victoria Street, S.W.1.

St. Asaph.—Houses (22) for R.D.C.; A. R. Richardson, builder, Rhyl.

Shrewsbury.—Houses (50); Wates, Ltd., London Rd., Norbury, London, S.W.16.

Staffs.—Schools, Bentley estate, Darlaston, and Lanesfield, Coseley; county architect, Earl Street, Stafford.

Stanley (Co. Durham).—Houses (44), Durham Road; J. R. Heslop, U.D.C. surveyor.

Stockport.—Houses (80), Carnforth Rd.; W. F. Gardner, surveyor, Town Hall.

Primary school, Banks Lane (£128,436); Thomas Davies & Son, Ltd., Hempshaw Lane, Stockport.

Stockton-on-Tees.—Dining rooms and kitchens at Oxbridge Lane and Richard Hind schools (£10,000); N. Stonehouse, Ltd., builders, Victoria Bridge.

Houses (200), Roseworth site, for the T.C. builders; Lane, Fox and Co., Ltd., Sunderland (180) and L. Brown and Sons, Stockton (20).

Stourbridge.—Infants' school and dining block at Broadway, Norton (£66,034); W. Cooper and Son, builders, Blackheath, Birmingham.

Houses (72), Norton estate; Nathan Hyde, Sedgley.

Stretford.—Infants' and junior school, Barton Road, for Lancashire E.C.; W. L. Gray, Ltd., builders, Farnworth, Lancs.

Sunderland.—Factory for making pre-fabricated and steel pipes; Aiton & Co., Derby.

Swindon.—Pumping stations, offices and other buildings, Rodbourne Sewage Disposal Works; J. Ackroyd, borough engineer, Civic Offices.

Tettenhall.—Houses (250), Woodhouse estate; J. W. Mason, surveyor, Council Offices.

Tottington.—Houses (20); L. Kenyon, surveyor, Town Hall.

Wallsend.—Houses (72), Low Willington; G. N. Teasdale, borough engineer, Town Hall.

Walsall.—County infants' school, Alum Well Road (£29,132); Rock & Downes, Aldridge.

Wirksworth.—Blocks of flats, Derby Road, J. Taylor, surveyor, Town Hall.

Worcester.—Secondary modern school, Nunnery Farm estate; E. B. Musman, architect, 12, Upper Berkeley Street, W.1.

I.E.E. Summer Meeting

ARRANGEMENTS are being made for a four-day summer meeting of the Institution of Electrical Engineers to be held in Cambridge and district, which is the "home area" of the President, Professor E. B. Moullin, from the 4th to 7th July next.

South Midland Centre.—The annual dinner of the South Midland Centre of the Institution will be held on 3rd February at the Grand Hotel, Birmingham. Applications for tickets (corporate members and guests £1 1s each, graduates and students 17s 6d each) should be made to Mr. R. H. Phillips, assistant hon. secretary, 125, Moor Street, Birmingham, 4, by 20th January.